

# CapstoneBBQRestaurantsProject

June 17, 2019

## 1 Applied Data Science Capstone - Opening a BBQ Restaurant in Kansas City

### 1.1 Introduction

One of the things that Kansas City is most well known for is their distinct barbecue style - a variety of different meats that are slow smoked and coated in a thick tomato based sauce. If you ask a Kansas City local what their favorite barbecue restaurant is, you are likely to hear a variety of answers. There are many different restaurants located around the metropolitan area, and each one has a slightly different take on the style than the others. However, as the Kansas City metropolitan area continues to grow, there will be additional opportunities for new BBQ restaurants to start up. The biggest challenges that a new BBQ restaurant would face is standing out within the Kansas City area, and a good location is one of the best ways to address this challenge. This report is an attempt to help future business developers decide where in Kansas City a new BBQ venue could be placed successfully.

The major factors we will use to determine the optimal location of a new BBQ restaurant are the following: 1. How many additional BBQ restaurants are within the region of Kansas City? 2. How many restaurants in total are already located within the region of Kansas City? 3. How many people live in this region of Kansas City?

Our ultimate goal is to find a location that is well populated, but that also isn't completely developed with too many restaurants and especially restaurants that would be a direct competitor with the new venue that is being planned.

By using data science techniques, we will analyze the neighborhoods of the Kansas City metropolitan area on the criteria given above. Then, based on these criteria, we will make some recommendations of potential locations that the new BBQ restaurant could be placed into, with the positives and negatives of each potential location considered.

### 1.2 Data

The Kansas City metropolitan area can be divided into Kansas City and a large collection of suburban areas that surround it. As we would like to place our new restaurant in a well populated area, according to the criteria given in the introduction, let's limit ourselves to towns in the Kansas City metro area with a population above 20,000 people. This leaves us with the following collection of towns, with given populations, as provided by the wikipedia page [https://en.wikipedia.org/wiki/Kansas\\_City\\_metropolitan\\_area](https://en.wikipedia.org/wiki/Kansas_City_metropolitan_area):

Kansas City, Missouri (488,943)

Kansas City, Kansas (152,938)

Overland Park, Kansas (191,278)  
Olathe, Kansas (137,472)  
Independence, Missouri (117,306)  
Lee's Summit, Missouri (97,290)  
Shawnee, Kansas (65,513)  
Blue Springs, Missouri (54,945)  
Lenexa, Kansas (53,553)  
Leavenworth, Kansas (36,210)  
Leawood, Kansas (34,659)  
Liberty, Missouri (31,507)  
Raytown, Missouri (29,211)  
Gladstone, Missouri (27,140)  
Grandview, Missouri (25,159)  
Belton, Missouri (23,480)  
Prarie Village, Kansas (22,368)  
Gardner, Kansas (21,583)  
Raymore, Missouri (21,167)

While there are numerous other municipalities within the Kansas City area, a majority of these municipalities are located within a 15 minute drive from one of the larger municipalities listed above. As a result, we will not consider them as large enough to warrant consideration for the location of a thriving new BBQ business within the Kansas City area.

In order to make a decision about which of the following municipalities would make good locations for a new BBQ restaurant, we will need to collect and use the following information:

1. The geographic latitude and longitude coordinates for each of the cities listed above. These centers can be obtained by using the geopy package in Python, or additionally, through the Wikipedia pages for the municipalities, all of which are linked in the reference above.
2. A geographical boundary for each of the following cities. As each of the above municipalities have different sizes from one another, it will be important to provide a radius in which we want to search for other restaurants and in particular other BBQ restaurants that our new venue would have to compete against.
3. By applying the Foursquare API, we will collect a list of all restaurants, as well as those which are designated BBQ restaurants within the boundaries that are defined in the previous point.

After all of this data is collected, we can use it to determine which municipalities are the best fit for our new venue.

In the following cells, we compute the geographic centers of the municipalities that we listed above.

```
In [1]: ! pip install geopy
        from geopy.geocoders import Nominatim
```

```
Requirement already satisfied: geopy in c:\users\andrew\anaconda3\lib\site-packages (1.20.0)
Requirement already satisfied: geographiclib<2,>=1.49 in c:\users\andrew\anaconda3\lib\site-pa
```

```

In [2]: import pandas as pd
import numpy as np
columns = ['Name', 'Latitude', 'Longitude']
namesList = ['Kansas City Missouri', 'Kansas City Kansas', 'Overland Park Kansas', 'Olathe Kansas', 'Independence Missouri', 'Lee's Summit Missouri', 'Shawnee Kansas', 'Blue Springs Missouri', 'Lenexa Kansas', 'Leavenworth Kansas', 'Leawood Kansas', 'Liberty Missouri', 'Raytown Missouri', 'Gladstone Missouri', 'Grandview Missouri', 'Belton Missouri', 'Prarie Village, Kansas', 'Gardner Kansas', 'Raymore Missouri']
latitudeList = []
longitudeList = []
KCdf = pd.DataFrame(columns = columns)
KCdf['Name'] = namesList
for name in namesList:
    geolocator = Nominatim(user_agent="KCMunicipalities")
    location = geolocator.geocode(name)
    latitudeList.append(location.latitude)
    longitudeList.append(location.longitude)
KCdf['Latitude'] = latitudeList
KCdf['Longitude'] = longitudeList
KCdf

```

```

Out[2]:
   Name                               Latitude  Longitude
0  Kansas City Missouri  39.100105 -94.578142
1   Kansas City Kansas  39.113456 -94.626497
2  Overland Park Kansas  38.974250 -94.685170
3    Olathe Kansas      38.883886 -94.818870
4  Independence Missouri  39.092479 -94.413792
5  Lee's Summit Missouri  38.910716 -94.382130
6    Shawnee Kansas      39.041672 -94.720238
7  Blue Springs Missouri  39.017316 -94.282265
8    Lenexa Kansas      38.969746 -94.784584
9  Leavenworth Kansas    39.311326 -94.922759
10   Leawood Kansas      38.966673 -94.616901
11   Liberty Missouri    39.246479 -94.419079
12   Raytown Missouri    39.016843 -94.463047
13   Gladstone Missouri  39.221477 -94.571975
14   Grandview Missouri  38.889848 -94.531382
15    Belton Missouri    38.810810 -94.531350
16  Prarie Village, Kansas  37.346513 -95.285950
17    Gardner Kansas      38.810925 -94.927296
18   Raymore Missouri    38.810131 -94.467650

```

Notice that Prarie Village, Kansas is located very far from the other points above. The geocode method has located the wrong Prarie Village, and so we adjust the data manually for this row of the table.

```

In [3]: KCdf.at[16, 'Latitude'] = 38.989722
KCdf.at[16, 'Longitude'] = -94.636111
KCdf[16:17]

```

```

Out[3]:
   Name                               Latitude  Longitude
16  Prarie Village, Kansas  38.989722 -94.636111

```

First, let's visualize these points on a map using the Folium package.

```
In [4]: ! pip install folium
import folium
```

```
Requirement already satisfied: folium in c:\users\andrew\anaconda3\lib\site-packages (0.9.1)
Requirement already satisfied: numpy in c:\users\andrew\anaconda3\lib\site-packages (from folium)
Requirement already satisfied: requests in c:\users\andrew\anaconda3\lib\site-packages (from folium)
Requirement already satisfied: branca>=0.3.0 in c:\users\andrew\anaconda3\lib\site-packages (from folium)
Requirement already satisfied: Jinja2>=2.9 in c:\users\andrew\anaconda3\lib\site-packages (from folium)
Requirement already satisfied: Chardet<3.1.0,>=3.0.2 in c:\users\andrew\anaconda3\lib\site-packages (from folium)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\andrew\anaconda3\lib\site-packages (from folium)
Requirement already satisfied: idna<2.9,>=2.5 in c:\users\andrew\anaconda3\lib\site-packages (from folium)
Requirement already satisfied: urllib3<1.25,>=1.21.1 in c:\users\andrew\anaconda3\lib\site-packages (from folium)
Requirement already satisfied: six in c:\users\andrew\anaconda3\lib\site-packages (from branca)
Requirement already satisfied: MarkupSafe>=0.23 in c:\users\andrew\anaconda3\lib\site-packages (from Jinja2)
```

```
In [5]: KCMAP = folium.Map(location = [39.100105, -94.578142], zoom_start = 9, tiles = 'CartoDB')
for row in KCdf.itertuples():
    folium.Marker([row.Latitude, row.Longitude], popup= row.Name).add_to(KCMAP)
```

KCMAP

```
Out [5]: <folium.folium.Map at 0x13a131b1080>
```

The above map provides the latitude and longitude of the centers of the municipalities that we will use for the centers of possible places to locate the new BBQ restaurant. However, we need to define the boundaries of these municipalities as well, so that we know how far away from the center to search for other restaurants.

First, let's treat each of the municipalities of Kansas City as a point.

```
In [6]: KCPoints = []
for row in KCdf.itertuples():
    rowPoint = (row.Latitude, row.Longitude)
    KCPoints.append(rowPoint)
KCPoints
```

```
Out [6]: [(39.100105, -94.5781416),
(39.1134562, -94.626497),
(38.9742502, -94.6851702),
(38.8838856, -94.81887),
(39.0924792, -94.4137923),
(38.9107156, -94.3821295),
(39.0416718, -94.7202376),
(39.017316, -94.282265),
(38.9697458, -94.7845837),
(39.3113257, -94.922759),
(38.966673, -94.6169012),
```

```
(39.246479, -94.419079),
(39.0168425, -94.4630468),
(39.2214765, -94.5719748),
(38.8898478, -94.5313816),
(38.8108097, -94.5313502),
(38.989722, -94.636111),
(38.8109254, -94.9272958),
(38.810131, -94.4676501)]
```

Now, let's compute the distance between these points, with the caveat that we want to create a circle of at least radius 1.5 miles around each of our municipalities. Then, let's store the minimum distance between these points that is at least three miles or larger. We'll also need to convert this distance into meters, as that is the measurement that Folium accepts.

```
In [7]: from geopy import distance
        KCdf['minDistance'] = np.nan
        i = 0
        for point in KCPoints:
            distanceList = []
            for secondpoint in KCPoints:
                if distance.distance(point, secondpoint).miles > 3:
                    distanceList.append(distance.distance(point, secondpoint).miles)
            minDistance = min(distanceList)
            KCdf.at[i, 'minDistance'] = minDistance
            i = i+1
        KCdf['minDistanceMeters'] = KCdf['minDistance']*1609.34
        KCdf
```

```
Out [7]:
```

	Name	Latitude	Longitude	minDistance	\
0	Kansas City Missouri	39.100105	-94.578142	8.228269	
1	Kansas City Kansas	39.113456	-94.626497	7.065800	
2	Overland Park Kansas	38.974250	-94.685170	3.713225	
3	Olathe Kansas	38.883886	-94.818870	6.204160	
4	Independence Missouri	39.092479	-94.413792	5.851633	
5	Lee's Summit Missouri	38.910716	-94.382130	8.172844	
6	Shawnee Kansas	39.041672	-94.720238	5.019238	
7	Blue Springs Missouri	39.017316	-94.282265	8.770909	
8	Lenexa Kansas	38.969746	-94.784584	5.362264	
9	Leavenworth Kansas	39.311326	-94.922759	19.805560	
10	Leawood Kansas	38.966673	-94.616901	3.713225	
11	Liberty Missouri	39.246479	-94.419079	8.382144	
12	Raytown Missouri	39.016843	-94.463047	5.851633	
13	Gladstone Missouri	39.221477	-94.571975	8.006209	
14	Grandview Missouri	38.889848	-94.531382	5.452052	
15	Belton Missouri	38.810810	-94.531350	3.438242	
16	Prarie Village, Kansas	38.989722	-94.636111	5.773958	
17	Gardner Kansas	38.810925	-94.927296	7.716028	
18	Raymore Missouri	38.810131	-94.467650	3.438242	

	minDistanceMeters
0	13242.083018
1	11371.274754
2	5975.841168
3	9984.603159
4	9417.267530
5	13152.884795
6	8077.661186
7	14115.374769
8	8629.705748
9	31873.880719
10	5975.841168
11	13489.718880
12	9417.267530
13	12884.711790
14	8774.205713
15	5533.300801
16	9292.261480
17	12417.712749
18	5533.300801

Now, let's plot circles that will represent the areas for each of the various municipalities that we are looking at.

```
In [8]: KCMMapRadii = folium.Map(location = [39.100105, -94.578142], zoom_start = 9, tiles = 'C
for row in KCdf.itertuples():
    folium.Marker([row.Latitude, row.Longitude], popup= row.Name).add_to(KCMMapRadii)
    folium.Circle(radius = row.minDistanceMeters/2, location = [row.Latitude, row.Long
```

KCMMapRadii

Out[8]: <folium.folium.Map at 0x13a131f9b70>

First, notice that there is some overlap between Kansas City Kansas and Kansas City Missouri. This is somewhat unavoidable, as the cities bleed into each other, geographically. There is also overlap between some of the larger Kansas suburbs: Overland Park, Prairie Village, and Leawood. Finally, there is a rather large circle surrounding Leavenworth, Kansas. This is due to the relatively large distance between it and Kansas City. In reality, we should not have such a large area representing the municipality. Let's manually shrink the radius to better fit the city, and see what the results look like.

```
In [9]: KCdf.at[9, 'minDistance'] = 5
        KCdf.at[9, 'minDistanceMeters'] = 5*1609.34
        KCdf[9:10]
```

Out[9]:		Name	Latitude	Longitude	minDistance	minDistanceMeters
9	Leavenworth	Kansas	39.311326	-94.922759	5.0	8046.7

```
In [10]: KMapRadii = folium.Map(location = [39.100105, -94.578142], zoom_start = 9, tiles = '
for row in KCdf.itertuples():
    folium.Marker([row.Latitude, row.Longitude], popup= row.Name).add_to(KMapRadii)
    folium.Circle(radius = row.minDistanceMeters/2, location = [row.Latitude, row.Longitude])

KMapRadii
```

```
Out[10]: <folium.folium.Map at 0x13a132d2048>
```

We've now defined a reasonable radius to search for restaurants within for each of our municipalities. Let's now use the Foursquare API to determine how many different restaurants there are within each of the circles that we've defined.

```
In [11]: import requests
CLIENT_ID = 'CSFSY4SGBL0IYHGPZXSDCY3G2YBBI5DT54LU1UHR0WZX3JUT' # your Foursquare ID
CLIENT_SECRET = 'R3RV530JXUN2XMO2S52B4R1A4DXOF152BZQBSPHWN1Y05V3G' # your Foursquare secret
VERSION = '20180604'
print('Your credentials:')
print('CLIENT_ID: ' + CLIENT_ID)
print('CLIENT_SECRET: ' + CLIENT_SECRET)
```

Your credentials:

CLIENT\_ID: CSFSY4SGBL0IYHGPZXSDCY3G2YBBI5DT54LU1UHR0WZX3JUT

CLIENT\_SECRET: R3RV530JXUN2XMO2S52B4R1A4DXOF152BZQBSPHWN1Y05V3G

The cell below defines a call to the Foursquare API that finds all of the restaurants within a specified radius of a point that are tagged as a BBQ Joint. It then takes those restaurants and places them into a table.

```
In [12]: def getNearbyBBQJoints(lat, lng, rad):

    venues_list=[]
    # create the API request URL
    url = 'https://api.foursquare.com/v2/venues/explore?client_id={}&client_secret={}&version={}&lat={}&lng={}&radius={}'
    CLIENT_ID, CLIENT_SECRET, VERSION, lat, lng, '4bf58dd8d48988d1df931735', rad, 1000
    # make the GET request
    results = requests.get(url).json()["response"]["groups"][0]["items"]

    # return only relevant information for each nearby venue
    venues_list.append([(
        v['venue']['name'],
        v['venue']['location']['lat'],
        v['venue']['location']['lng'],
        v['venue']['categories'][0]['name']) for v in results])

    nearby_venues = pd.DataFrame([item for venue_list in venues_list for item in venue_list])
    nearby_venues.columns = [
        'Venue',
```

```

        'Venue_Latitude',
        'Venue_Longitude',
        'Venue_Category']
    nearby_venues = nearby_venues[nearby_venues.Venue_Category == 'BBQ Joint']
    return(nearby_venues)

```

In the cell below, we'll find all of the restaurants within the different municipalities that we considered at the start of the project, and place them on a map. We'll also add a row to the dataframe that counts each of the BBQ restaurants within the municipality.

```

In [13]: for i in range(19):
    print(getNearbyBBQJoints(KCdf.at[i, 'Latitude'], KCdf.at[i, 'Longitude'], KCdf.at[i, 'Municipality'], KCdf.at[i, 'BBQCount'])
    print(KCdf)

```

	Venue	Venue_Latitude	Venue_Longitude	\
0	Fiorella's Jack Stack Barbecue	39.087455	-94.585568	
1	Arthur Bryant's Barbeque	39.091446	-94.556285	
2	County Road Ice House	39.097412	-94.582144	
3	Gates Bar-B-Q	39.098435	-94.555813	
4	Slap's BBQ	39.102547	-94.624463	
5	Q39	39.057394	-94.598225	
6	Gates Bar-B-Q	39.069013	-94.585127	
7	Char Bar	39.053999	-94.592560	
8	Hawg Jaw Que & Brew	39.126202	-94.577500	
9	Plowboys Barbeque	39.100123	-94.583051	
10	Rosedale BBQ	39.065897	-94.616166	
11	Three Little Pigs Barbeque	39.082738	-94.581730	
12	Gates Bar-B-Q	39.116787	-94.636172	
13	Danny Edwards BBQ	39.075241	-94.603904	
14	Smokin' Guns BBQ	39.131002	-94.577727	
15	Gates Bar-B-Q	39.041067	-94.569238	
24	Kobi Q	39.094695	-94.580951	
26	Green Duck Grill	39.078502	-94.552538	
27	Big Grill & More	39.111317	-94.623828	

	Venue_Category
0	BBQ Joint
1	BBQ Joint
2	BBQ Joint
3	BBQ Joint
4	BBQ Joint
5	BBQ Joint
6	BBQ Joint
7	BBQ Joint
8	BBQ Joint
9	BBQ Joint
10	BBQ Joint



11 BBQ Joint  
 12 BBQ Joint  
 13 BBQ Joint  
 14 BBQ Joint  
 15 BBQ Joint  
 24 BBQ Joint  
 26 BBQ Joint  
 27 BBQ Joint

	Venue	Venue_Latitude	Venue_Longitude \
0	Slap's BBQ	39.102547	-94.624463
1	Gates Bar-B-Q	39.116787	-94.636172
2	Fiorella's Jack Stack Barbecue	39.087455	-94.585568
3	Hawg Jaw Que & Brew	39.126202	-94.577500
4	County Road Ice House	39.097412	-94.582144
5	Rosedale BBQ	39.065897	-94.616166
6	Plowboys Barbeque	39.100123	-94.583051
7	Danny Edwards BBQ	39.075241	-94.603904
8	Three Little Pigs Barbeque	39.082738	-94.581730
9	Smokin' Guns BBQ	39.131002	-94.577727
11	Big Grill & More	39.111317	-94.623828
15	B's BBQ & Soulfood	39.129544	-94.650446
16	Bear's Smoke Shack Ozark Bbq	39.123128	-94.659493
19	Kobi Q	39.094695	-94.580951

Venue\_Category

0 BBQ Joint  
 1 BBQ Joint  
 2 BBQ Joint  
 3 BBQ Joint  
 4 BBQ Joint  
 5 BBQ Joint  
 6 BBQ Joint  
 7 BBQ Joint  
 8 BBQ Joint  
 9 BBQ Joint  
 11 BBQ Joint  
 15 BBQ Joint  
 16 BBQ Joint  
 19 BBQ Joint

	Venue	Venue_Latitude	Venue_Longitude \
0	Fiorella's Jack Stack Barbecue	38.955938	-94.668398
2	Wyandot Barbeque 2	38.992845	-94.669574
3	Cindy's Grill	38.989112	-94.704589

Venue\_Category

0 BBQ Joint  
 2 BBQ Joint  
 3 BBQ Joint

	Venue	Venue_Latitude	Venue_Longitude	Venue_Category
0	Smokin' Joe's BBQ	38.883286	-94.810182	BBQ Joint
1	Johnny's BBQ	38.866532	-94.840718	BBQ Joint
3	Crazy Good Eats	38.854497	-94.779160	BBQ Joint

	Venue	Venue_Latitude	Venue_Longitude	Venue_Category
0	A Little BBQ Joint	39.10169	-94.428947	BBQ Joint
1	Dickey's Barbecue Pit	39.07612	-94.414167	BBQ Joint
2	Wing Street	39.07749	-94.413909	BBQ Joint

	Venue	Venue_Latitude	Venue_Longitude	\
0	Filling Station BBQ	38.911385	-94.375273	
1	Fiorella's Jack Stack Barbecue	38.932367	-94.411577	
2	Summit Hickory Pit BBQ	38.903804	-94.356784	
3	Dickeys Barbecue Pit	38.928675	-94.408088	
5	Q's 'Que - Bar-B-Que Restaurant	38.911541	-94.378910	
6	Summit Hickory Pit	38.905415	-94.345152	
7	Jazzy B's Diner	38.945326	-94.337981	

	Venue_Category
0	BBQ Joint
1	BBQ Joint
2	BBQ Joint
3	BBQ Joint
5	BBQ Joint
6	BBQ Joint
7	BBQ Joint

	Venue	Venue_Latitude	Venue_Longitude	Venue_Category
0	Blind Box BBQ	39.015752	-94.739474	BBQ Joint
1	Bates City Bar-B-Que	39.012023	-94.723171	BBQ Joint
3	Mad Man's BBQ	39.022778	-94.715124	BBQ Joint
4	Vintage Bar-B-Que	39.022687	-94.727053	BBQ Joint

	Venue	Venue_Latitude	Venue_Longitude	Venue_Category
0	Zarda BBQ	39.020358	-94.271211	BBQ Joint
1	Plowboys BBQ	38.988473	-94.273932	BBQ Joint
3	Three Pigs BBQ	39.027697	-94.272221	BBQ Joint
9	Babyback's Rib Shack	39.008901	-94.223514	BBQ Joint
10	Blue Springs BBQ Blaze Off	39.032853	-94.332626	BBQ Joint
11	Bates City BBQ	39.024668	-94.224833	BBQ Joint
12	Three pigs BBQ food truck	39.041142	-94.339271	BBQ Joint

	Venue	Venue_Latitude	Venue_Longitude	Venue_Category
0	Lenexa BBQ	38.969624	-94.758701	BBQ Joint
1	Mad Man's KC BBQ	38.970698	-94.784216	BBQ Joint
2	The Rub Bar-B-Que	38.938037	-94.798172	BBQ Joint

	Venue	Venue_Latitude	Venue_Longitude	Venue_Category
1	Ten Penny Restaurant & Bar	39.300233	-94.926982	BBQ Joint
2	Smokin Meats BBQ	39.328133	-94.918164	BBQ Joint

	Venue	Venue_Latitude	Venue_Longitude	Venue_Category
3	KC Smokehouse BBQ	38.974862	-94.594961	BBQ Joint

	Venue	Venue_Latitude	Venue_Longitude	Venue_Category
--	-------	----------------	-----------------	----------------

1	Mudhole BBQ	39.244880	-94.416140	BBQ Joint
4	Dickey's Barbeque Pit	39.239676	-94.439084	BBQ Joint

	Venue	Venue_Latitude	Venue_Longitude	\
0	Gates Bar-B-Q	39.053308	-94.454891	
1	Big T's Bar-B-Que	39.032281	-94.513696	
2	Ritter's Barbeque and Catering	39.001226	-94.463507	
3	Benny's Bbq	39.051975	-94.452494	
4	Sweet Baby Rays Barbecue Shack	39.051804	-94.479050	

Venue_Category
0 BBQ Joint
1 BBQ Joint
2 BBQ Joint
3 BBQ Joint
4 BBQ Joint

	Venue	Venue_Latitude	Venue_Longitude	\
0	Smokehouse Barbecue-Gladstone Mo	39.209058	-94.577106	
1	Mudhole BBQ	39.207633	-94.575539	
3	Dickeys Barbecue Pit	39.186238	-94.549607	

Venue_Category
0 BBQ Joint
1 BBQ Joint
3 BBQ Joint

	Venue	Venue_Latitude	Venue_Longitude	Venue_Category
0	Dad's Bar-B-Que	38.88303	-94.537994	BBQ Joint

	Venue	Venue_Latitude	Venue_Longitude	Venue_Category
0	The Little Pig	38.814108	-94.534685	BBQ Joint
1	Gregory G's BBQ	38.814329	-94.527541	BBQ Joint
2	Belton Heritage BBQ Contest	38.807992	-94.524634	BBQ Joint
3	Gregory G's BBQ	38.813419	-94.520905	BBQ Joint
4	One Rib Short Barbecue	38.813957	-94.520556	BBQ Joint
5	Mick B's BBQ	38.800608	-94.535206	BBQ Joint

	Venue	Venue_Latitude	Venue_Longitude	Venue_Category
0	R.J.'s Bob-Be-Que Shack	39.022798	-94.658150	BBQ Joint
1	C. Frogs	39.002000	-94.631150	BBQ Joint
2	Johnny's BBQ	39.020794	-94.665211	BBQ Joint
7	KC Smokehouse BBQ	38.974862	-94.594961	BBQ Joint
10	Wyandot Barbeque 2	38.992845	-94.669574	BBQ Joint

	Venue	Venue_Latitude	Venue_Longitude	Venue_Category
2	Billy Sims	38.812739	-94.906339	BBQ Joint

	Venue	Venue_Latitude	Venue_Longitude	Venue_Category
0	Boulevard Bar & BBQ	38.812625	-94.476415	BBQ Joint
1	The BBQ Patio	38.791537	-94.465950	BBQ Joint

	Name	Latitude	Longitude	minDistance	\
0	Kansas City Missouri	39.100105	-94.578142	8.228269	
1	Kansas City Kansas	39.113456	-94.626497	7.065800	
2	Overland Park Kansas	38.974250	-94.685170	3.713225	

3	Olathe Kansas	38.883886	-94.818870	6.204160
4	Independence Missouri	39.092479	-94.413792	5.851633
5	Lee's Summit Missouri	38.910716	-94.382130	8.172844
6	Shawnee Kansas	39.041672	-94.720238	5.019238
7	Blue Springs Missouri	39.017316	-94.282265	8.770909
8	Lenexa Kansas	38.969746	-94.784584	5.362264
9	Leavenworth Kansas	39.311326	-94.922759	5.000000
10	Leawood Kansas	38.966673	-94.616901	3.713225
11	Liberty Missouri	39.246479	-94.419079	8.382144
12	Raytown Missouri	39.016843	-94.463047	5.851633
13	Gladstone Missouri	39.221477	-94.571975	8.006209
14	Grandview Missouri	38.889848	-94.531382	5.452052
15	Belton Missouri	38.810810	-94.531350	3.438242
16	Prarie Village, Kansas	38.989722	-94.636111	5.773958
17	Gardner Kansas	38.810925	-94.927296	7.716028
18	Raymore Missouri	38.810131	-94.467650	3.438242

	minDistanceMeters	BBQCount
0	13242.083018	19.0
1	11371.274754	14.0
2	5975.841168	3.0
3	9984.603159	3.0
4	9417.267530	3.0
5	13152.884795	7.0
6	8077.661186	4.0
7	14115.374769	7.0
8	8629.705748	3.0
9	8046.700000	2.0
10	5975.841168	1.0
11	13489.718880	2.0
12	9417.267530	5.0
13	12884.711790	3.0
14	8774.205713	1.0
15	5533.300801	6.0
16	9292.261480	5.0
17	12417.712749	1.0
18	5533.300801	2.0

```
In [14]: KCMaPBBQ = folium.Map(location = [39.100105, -94.578142], zoom_start = 9, tiles = 'CartoDB Positron')
for row in KCdf.itertuples():
    folium.Marker([row.Latitude, row.Longitude], popup= row.Name).add_to(KCMaPBBQ)
    folium.Circle(radius = row.minDistanceMeters/2, location = [row.Latitude, row.Longitude]).add_to(KCMaPBBQ)
for i in range(19):
    df = getNearbyBBQJoints(KCdf.at[i, 'Latitude'], KCdf.at[i, 'Longitude'], KCdf.at[i, 'Name'])
    for row in df.itertuples():
        folium.Marker([row.Venue_Latitude, row.Venue_Longitude], popup= row.Venue, icon= row.Name).add_to(KCMaPBBQ)
```

```
Out[14]: <folium.folium.Map at 0x13a13312f98>
```

In the cells below, we'll compute the restaurants that are located within each of the municipalities we have considered.

```
In [15]: def getNearbyRestaurants(lat, lng, rad):
```

```
    venues_list=[]
    # create the API request URL
    url = 'https://api.foursquare.com/v2/venues/explore?client_id={}&client_secret={}&v={}&lat={}&lng={}&radius={}&limit=25'
    CLIENT_ID, CLIENT_SECRET, VERSION, lat, lng, '4d4b7105d754a06374d81259', rad, 100
    # make the GET request
    results = requests.get(url).json()["response"]["groups"][0]["items"]

    # return only relevant information for each nearby venue
    venues_list.append([(
        v['venue']['name'],
        v['venue']['location']['lat'],
        v['venue']['location']['lng'],
        v['venue']['categories'][0]['name']) for v in results])

    nearby_venues = pd.DataFrame([item for venue_list in venues_list for item in venue_list])
    nearby_venues.columns = [
        'Venue',
        'Venue_Latitude',
        'Venue_Longitude',
        'Venue_Category']
    return(nearby_venues)
```

```
In [16]: for i in range(19):
```

```
    print(getNearbyRestaurants(KCdf.at[i, 'Latitude'], KCdf.at[i, 'Longitude'], KCdf.at[i, 'Radius']))
    KCdf.at[i, 'RestaurantCount'] = len(getNearbyRestaurants(KCdf.at[i, 'Latitude'], KCdf.at[i, 'Longitude'], KCdf.at[i, 'Radius']))
    print(KCdf)
```

	Venue	Venue_Latitude	Venue_Longitude	\
0	Bristol Seafood Grill	39.097064	-94.582879	
1	Zaina	39.100654	-94.580862	
2	Milwaukee Delicatessen Co.	39.103463	-94.584324	
3	Tavernonna	39.100081	-94.584549	
4	Yard House	39.098491	-94.583226	
5	Grinders	39.091405	-94.578175	
6	Blue Nile Café	39.108569	-94.582190	
7	Corvino Supper Club & Tasting Room	39.090617	-94.582752	
8	Happy Gillis Cafe & Hangout	39.108916	-94.570382	
9	il Lazzarone	39.108572	-94.584449	
10	Garozzo's Ristorante	39.109492	-94.571955	
11	Anton's	39.094184	-94.583659	
12	Beignet	39.109559	-94.583027	
13	Kansas City Taco Company	39.107842	-94.581529	

14	ProteinHouse	39.097534	-94.583155
15	The Rieger	39.089489	-94.583880
16	Nara NeoJapanese	39.093881	-94.583329
17	Spokes Cafe & Cyclery	39.099762	-94.590261
18	Reserve	39.100632	-94.580657
19	Vietnam Cafe	39.109306	-94.573173
20	Homeslice Pizza & Pints	39.095629	-94.580952
21	Habashi House	39.109466	-94.582907
22	Brown & Loe	39.108731	-94.581487
23	The Mixx	39.097697	-94.582854
24	Burrito Bros.	39.109076	-94.582824
25	The Rockhill Grille	39.088975	-94.581701
26	BRGR Kitchen + Bar	39.096992	-94.583159
27	Extra Virgin	39.090380	-94.584113
28	The Farmhouse	39.109478	-94.584770
29	Fiorella's Jack Stack Barbecue	39.087455	-94.585568
..	...	...	...
70	EJ's Urban Eatery	39.104408	-94.602279
71	Empanada Madness	39.084218	-94.595145
72	Blue Bird Bistro	39.093026	-94.593471
73	Mission Taco Joint	39.091538	-94.578571
74	The Antler Room	39.081144	-94.576148
75	The Art of Pizza	39.091725	-94.584682
76	Teocali Mexican Restaurant & Cantina	39.081016	-94.576175
77	Tribe Street Kitchen	39.109020	-94.584554
78	Gates Bar-B-Q	39.098435	-94.555813
79	Pho KC	39.110560	-94.576958
80	Town Topic Hamburgers	39.090686	-94.584843
81	Arthur Bryant's Barbeque	39.091446	-94.556285
82	Jimmy John's	39.100938	-94.580636
83	Howard's	39.092906	-94.579096
84	The Homesteader Cafe	39.105500	-94.581568
85	You Say Tomato	39.075368	-94.576198
86	Panera Bread	39.083295	-94.581489
87	El Pueblito	39.084540	-94.594172
88	Slap's BBQ	39.102547	-94.624463
89	Margarita's	39.076286	-94.602035
90	El Patron	39.075311	-94.603087
91	Lutfi's Fried Fish	39.071220	-94.585336
92	Freestyle Poké	39.107944	-94.583899
93	LaMar's Donuts and Coffee	39.065943	-94.585273
94	Columbus Park Ramen Shop	39.108968	-94.570392
95	Ponak's Mexican Kitchen & Bar	39.075725	-94.603163
96	The Jacobson	39.087668	-94.588119
97	Hawg Jaw Que & Brew	39.126202	-94.577500
98	Manny's Mexican Restaurant	39.089144	-94.586654
99	Browne's Irish Market	39.067594	-94.592598

	Venue_Category
0	Seafood Restaurant
1	Mediterranean Restaurant
2	Deli / Bodega
3	Italian Restaurant
4	American Restaurant
5	Pizza Place
6	Ethiopian Restaurant
7	New American Restaurant
8	Sandwich Place
9	Pizza Place
10	Italian Restaurant
11	Steakhouse
12	Cajun / Creole Restaurant
13	Taco Place
14	Restaurant
15	New American Restaurant
16	Sushi Restaurant
17	Café
18	New American Restaurant
19	Vietnamese Restaurant
20	Pizza Place
21	Middle Eastern Restaurant
22	American Restaurant
23	American Restaurant
24	Burrito Place
25	American Restaurant
26	Burger Joint
27	Tapas Restaurant
28	American Restaurant
29	BBQ Joint
..	...
70	Southern / Soul Food Restaurant
71	South American Restaurant
72	Vegetarian / Vegan Restaurant
73	Taco Place
74	New American Restaurant
75	Pizza Place
76	Mexican Restaurant
77	Tapas Restaurant
78	BBQ Joint
79	Vietnamese Restaurant
80	Burger Joint
81	BBQ Joint
82	Sandwich Place
83	American Restaurant
84	American Restaurant
85	Breakfast Spot

86	Bakery
87	Mexican Restaurant
88	BBQ Joint
89	Mexican Restaurant
90	Mexican Restaurant
91	Cajun / Creole Restaurant
92	Poke Place
93	Donut Shop
94	Ramen Restaurant
95	Mexican Restaurant
96	New American Restaurant
97	BBQ Joint
98	Mexican Restaurant
99	Deli / Bodega

[100 rows x 4 columns]

	Venue	Venue_Latitude	Venue_Longitude	\
0	El Camino Real	39.115082	-94.626717	
1	Slap's BBQ	39.102547	-94.624463	
2	Bonito Michoacan	39.115695	-94.640553	
3	Gates Bar-B-Q	39.116787	-94.636172	
4	Tao Tao	39.115651	-94.643329	
5	Voltaire	39.093935	-94.604779	
6	Go Chicken Go	39.105195	-94.626606	
7	EJ's Urban Eatery	39.104408	-94.602279	
8	Carniceria y Tortilleria San Antonio	39.087544	-94.631346	
9	Jarocho	39.087385	-94.626925	
10	Ninfa's Tortillas & Taqueria	39.087532	-94.634841	
11	Spokes Cafe & Cyclery	39.099762	-94.590261	
12	il Lazzarone	39.108572	-94.584449	
13	Beignet	39.109559	-94.583027	
14	El Pollo Rey	39.087255	-94.631770	
15	Milwaukee Delicatessen Co.	39.103463	-94.584324	
16	The Westside Local	39.093300	-94.593200	
17	Blue Nile Café	39.108569	-94.582190	
18	The Farmhouse	39.109478	-94.584770	
19	Habashi House	39.109466	-94.582907	
20	Chez Elle	39.092578	-94.593221	
21	Burrito Bros.	39.109076	-94.582824	
22	The Majestic Restaurant	39.102607	-94.588112	
23	Kansas City Taco Company	39.107842	-94.581529	
24	Bristol Seafood Grill	39.097064	-94.582879	
25	Brown & Loe	39.108731	-94.581487	
26	Tavernonna	39.100081	-94.584549	
27	La Bodega	39.085080	-94.592992	
28	Bloom Baking Company	39.109630	-94.582700	
29	Zaina	39.100654	-94.580862	
..	...	...	...	



70	Tikka House	39.109008	-94.582804
71	County Road Ice House	39.097412	-94.582144
72	El Patron	39.075311	-94.603087
73	Anthony's Restaurant & Lounge	39.105297	-94.580523
74	801 Chophouse	39.097124	-94.582579
75	Hien Vuong Restaurant	39.108813	-94.582723
76	Tribe Street Kitchen	39.109020	-94.584554
77	Ponak's Mexican Kitchen & Bar	39.075725	-94.603163
78	Nguyen Pho + Grill	39.108612	-94.580591
79	El Pueblito	39.084540	-94.594172
80	First Watch	39.142157	-94.575438
81	The North End	39.110416	-94.572849
82	Planet Sub	39.100586	-94.583151
83	Neo Delicatessan	39.102977	-94.583063
84	Parlor	39.092813	-94.577465
85	Papa Kenos Pizzeria	39.091358	-94.585768
86	Hawg Jaw Que & Brew	39.126202	-94.577500
87	Charisse	39.101625	-94.582211
88	Chipotle Mexican Grill	39.097368	-94.582474
89	Jason's Deli	39.100569	-94.583193
90	The Art of Pizza	39.091725	-94.584682
91	Pho KC	39.110560	-94.576958
92	Sabor Y Sol	39.066180	-94.616020
93	Town Topic Hamburgers	39.090686	-94.584843
94	China Feast	39.120190	-94.673139
95	The Homesteader Cafe	39.105500	-94.581568
96	The Antler Room	39.081144	-94.576148
97	Freestyle Poké	39.107944	-94.583899
98	Teocali Mexican Restaurant & Cantina	39.081016	-94.576175
99	Rico's Tacos Lupe	39.084752	-94.593884

	Venue_Category
0	Mexican Restaurant
1	BBQ Joint
2	Mexican Restaurant
3	BBQ Joint
4	Chinese Restaurant
5	American Restaurant
6	Fried Chicken Joint
7	Southern / Soul Food Restaurant
8	Mexican Restaurant
9	Seafood Restaurant
10	Mexican Restaurant
11	Café
12	Pizza Place
13	Cajun / Creole Restaurant
14	Mexican Restaurant
15	Deli / Bodega

16	Gastropub
17	Ethiopian Restaurant
18	American Restaurant
19	Middle Eastern Restaurant
20	French Restaurant
21	Burrito Place
22	Steakhouse
23	Taco Place
24	Seafood Restaurant
25	American Restaurant
26	Italian Restaurant
27	Tapas Restaurant
28	Bakery
29	Mediterranean Restaurant
..	...
70	Indian Restaurant
71	BBQ Joint
72	Mexican Restaurant
73	Italian Restaurant
74	Steakhouse
75	Vietnamese Restaurant
76	Tapas Restaurant
77	Mexican Restaurant
78	Vietnamese Restaurant
79	Mexican Restaurant
80	Breakfast Spot
81	Italian Restaurant
82	Sandwich Place
83	Deli / Bodega
84	Food Court
85	Pizza Place
86	BBQ Joint
87	French Restaurant
88	Mexican Restaurant
89	Deli / Bodega
90	Pizza Place
91	Vietnamese Restaurant
92	Mexican Restaurant
93	Burger Joint
94	Chinese Restaurant
95	American Restaurant
96	New American Restaurant
97	Poke Place
98	Mexican Restaurant
99	Taco Place

[100 rows x 4 columns]

Venue Venue\_Latitude \

0	Thai Place Restaurant	38.970816
1	India Palace	38.971607
2	Pizza Shoppe	38.971951
3	J. Gilbert's Wood-Fired Steaks & Seafood	38.967260
4	Dragon Inn	38.984069
5	Mr. Gyros Greek Food & Pastry	38.978801
6	Mi Ranchito	38.984278
7	The Snack Shack on Santa Fe	38.983103
8	ABC Cafe	38.971013
9	Clock Tower Bakery	38.985322
10	Lenny's Sub Shop	38.970807
11	Papa Keno's Pizzeria	38.985687
12	Pie Five Pizza	38.963598
13	Maui Express	38.973002
14	The Upper Crust	38.984406
15	Santa Fe Cafe	38.971628
16	Panera Bread	38.992493
17	Chipotle Mexican Grill	38.963537
18	Fiorella's Jack Stack Barbecue	38.955938
19	First Watch - Metcalf	38.963159
20	Cinzetti's Italian Market Restaurant	38.963429
21	Elsas Ethiopian Restaurant	38.983348
22	Firehouse Subs	38.963602
23	SONIC Drive In	38.971873
24	Mud Pie Vegan Bakery & Coffeehouse	38.956213
25	Pita Pit	38.955938
26	Goodcents Deli Fresh Subs	38.972843
27	BURG & BARREL	38.991710
28	Paradise Biryani Pointe	38.963768
29	Jen Jen's Chinese Restaurant	38.964782
..	...	...
70	El Salvadoreño	38.971653
71	McDonald's	38.970802
72	Hot Wok	38.970835
73	Carniceria Lupita	38.971625
74	Toro Hibachi Sushi & Asian	38.964631
75	Taste	38.984524
76	Royal Buffet	38.970452
77	Hikari	38.964677
78	Icing On The Cake	38.978510
79	Intentions	38.984201
80	Red Bench Cafe	38.985015
81	Sinbads Grill	38.978663
82	Green Mill Restaurant and Bar	38.969726
83	The Cooking Studio	38.963451
84	Hyderabad House	38.963760
85	Ambrosia Cafe	38.984855
86	McDonald's	38.989131

87	New Theatre Restaurant, Ticket Information and...	38.961187
88	HoneyBaked Ham	38.967228
89	McDonald's	38.957092
90	Longbranch Saloon	38.966033
91	Jasmine Garden	38.956889
92	Blimpie	38.956238
93	Hy-Vee Market Grill	38.955845
94	Hy-Vee Cafe	38.955558
95	China Rose	38.955317
96	China Town Cafe	38.954848
97	Margarita Paradise	38.964606
98	Sonic Drive-In	38.992645
99	Wyandot Barbeque 2	38.992845

	Venue_Longitude	Venue_Category
0	-94.695080	Thai Restaurant
1	-94.702041	Indian Restaurant
2	-94.688850	Pizza Place
3	-94.666832	Steakhouse
4	-94.672445	Asian Restaurant
5	-94.668037	Greek Restaurant
6	-94.668683	Mexican Restaurant
7	-94.672463	Burger Joint
8	-94.701775	Dim Sum Restaurant
9	-94.671488	Bakery
10	-94.694631	Sandwich Place
11	-94.671447	Pizza Place
12	-94.667552	Pizza Place
13	-94.687888	Asian Restaurant
14	-94.671737	Bakery
15	-94.702493	Diner
16	-94.687671	Bakery
17	-94.665841	Mexican Restaurant
18	-94.668398	BBQ Joint
19	-94.668195	Breakfast Spot
20	-94.669530	Italian Restaurant
21	-94.672534	Ethiopian Restaurant
22	-94.667028	Sandwich Place
23	-94.688238	Fast Food Restaurant
24	-94.670628	Bakery
25	-94.688279	Sandwich Place
26	-94.687897	Sandwich Place
27	-94.666669	American Restaurant
28	-94.670058	Indian Restaurant
29	-94.670019	Chinese Restaurant
..	...	...
70	-94.699870	Latin American Restaurant
71	-94.697775	Fast Food Restaurant

72	-94.701419	Chinese Restaurant
73	-94.702955	Mexican Restaurant
74	-94.671786	Sushi Restaurant
75	-94.671970	American Restaurant
76	-94.667093	Restaurant
77	-94.671055	Japanese Restaurant
78	-94.666930	Bakery
79	-94.670621	Sushi Restaurant
80	-94.671491	Café
81	-94.666522	Mediterranean Restaurant
82	-94.712514	Pizza Place
83	-94.670727	Restaurant
84	-94.669880	Indian Restaurant
85	-94.669723	Café
86	-94.668160	Fast Food Restaurant
87	-94.672251	Food
88	-94.665735	Sandwich Place
89	-94.671906	Fast Food Restaurant
90	-94.665520	Restaurant
91	-94.690003	Chinese Restaurant
92	-94.689840	Fast Food Restaurant
93	-94.685050	Restaurant
94	-94.683730	American Restaurant
95	-94.687101	Chinese Restaurant
96	-94.685873	Chinese Restaurant
97	-94.665325	Mexican Restaurant
98	-94.702805	Fast Food Restaurant
99	-94.669574	BBQ Joint

[100 rows x 4 columns]

	Venue	Venue_Latitude	Venue_Longitude	\
0	Downtown Diner	38.883298	-94.815786	
1	Mi Ranchito Cocina & Cantina Mexicana	38.869461	-94.815501	
2	Old 56 Family Restaurant	38.868213	-94.818221	
3	Bonito Michoacan	38.882694	-94.797723	
4	Mom's Kitchen	38.883934	-94.810246	
5	Strip's	38.883884	-94.800070	
6	Smokin' Joe's BBQ	38.883286	-94.810182	
7	Dub's V's Bar & Deli	38.882745	-94.819296	
8	Panda Express	38.884755	-94.835502	
9	Johnny's BBQ	38.866532	-94.840718	
10	Pizza Shoppe	38.882235	-94.834229	
11	Jimmy John's	38.884562	-94.835579	
12	Chipotle Mexican Grill	38.851181	-94.817511	
13	Sakura Sushi Bar And Grill	38.883439	-94.799790	
14	Oscar's Authentic Mexican Grill	38.884410	-94.780190	
15	Dunkin'	38.912301	-94.794389	
16	Taco John's	38.854212	-94.800604	

17	MOD Pizza	38.851498	-94.818617
18	Pizza Shoppe	38.853983	-94.798847
19	Red Robin Gourmet Burgers and Brews	38.850677	-94.817807
20	Bo Bo Chinese	38.853732	-94.796165
21	Houlihan's	38.912405	-94.777246
22	Panera Bread	38.851847	-94.818201
23	Freddy's Frozen Custard & Steakburgers	38.854348	-94.805723
24	Subway	38.883400	-94.805700
25	Rajmahal Indian Restaurant	38.881516	-94.787172
26	Food Truck Friday	38.881998	-94.819828
27	Arby's	38.854182	-94.800128
28	Waffle House	38.883376	-94.795369
29	Cracker Barrel Old Country Store	38.909274	-94.773335
..	...	...	...
70	Applebee's Grill + Bar	38.884250	-94.772390
71	Popeyes Louisiana Kitchen	38.882532	-94.762072
72	Hardee's	38.871491	-94.834880
73	Uncle Buck's Grill	38.909591	-94.777465
74	Taco Bell	38.858597	-94.816648
75	Steak 'n Shake	38.907647	-94.774451
76	Pizza Hut	38.897765	-94.778846
77	SONIC Drive In	38.870230	-94.834923
78	Golden Palace	38.856067	-94.780330
79	Taco Bell	38.883271	-94.798436
80	Subway	38.886471	-94.837582
81	Arby's	38.913235	-94.794833
82	Jimmy John's	38.851325	-94.819175
83	Crave Truck	38.882153	-94.820259
84	Jack in the Box	38.913221	-94.791103
85	Long John Silvers & A&W	38.883395	-94.807004
86	K-Macho's Mexican Grill and Cantina	38.882683	-94.797892
87	Cilantro Southwest Grill	38.851390	-94.818309
88	Subway	38.881516	-94.835122
89	McDonald's	38.884060	-94.780054
90	BBs Grill & Bar	38.885256	-94.833813
91	McDonald's	38.857788	-94.815082
92	KC Donut Co Parker	38.877338	-94.834723
93	Wendy's	38.858128	-94.813585
94	La Hacienda	38.883351	-94.799785
95	Subway	38.879976	-94.762229
96	Perkins Restaurant & Bakery	38.884105	-94.787263
97	Lenexa Food Frenzy	38.896543	-94.801794
98	Crazy Good Eats	38.854497	-94.779160
99	China Buffet	38.884801	-94.780741

	Venue_Category
0	American Restaurant
1	Mexican Restaurant

2	Restaurant
3	Mexican Restaurant
4	American Restaurant
5	Fried Chicken Joint
6	BBQ Joint
7	Sandwich Place
8	Chinese Restaurant
9	BBQ Joint
10	Pizza Place
11	Sandwich Place
12	Mexican Restaurant
13	Japanese Restaurant
14	Mexican Restaurant
15	Donut Shop
16	Fast Food Restaurant
17	Pizza Place
18	Pizza Place
19	Burger Joint
20	Chinese Restaurant
21	American Restaurant
22	Bakery
23	Burger Joint
24	Sandwich Place
25	Indian Restaurant
26	Food Truck
27	Fast Food Restaurant
28	Breakfast Spot
29	American Restaurant
..	...
70	American Restaurant
71	Fried Chicken Joint
72	Fast Food Restaurant
73	Seafood Restaurant
74	Fast Food Restaurant
75	American Restaurant
76	Pizza Place
77	Fast Food Restaurant
78	Chinese Restaurant
79	Fast Food Restaurant
80	Sandwich Place
81	Fast Food Restaurant
82	Sandwich Place
83	Food Truck
84	Fast Food Restaurant
85	Fast Food Restaurant
86	Food Court
87	Mexican Restaurant
88	Sandwich Place

89 Fast Food Restaurant  
 90 Restaurant  
 91 Fast Food Restaurant  
 92 Donut Shop  
 93 Fast Food Restaurant  
 94 Mexican Restaurant  
 95 Sandwich Place  
 96 American Restaurant  
 97 Food Truck  
 98 BBQ Joint  
 99 Chinese Restaurant

[100 rows x 4 columns]

	Venue	Venue_Latitude	Venue_Longitude \
0	Cafe Verona	39.092208	-94.417490
1	Courthouse Exchange	39.092076	-94.416382
2	Ophelia's	39.092804	-94.415698
3	Square Pizza	39.092940	-94.417582
4	A Little BBQ Joint	39.101690	-94.428947
5	Rheinland	39.093184	-94.415722
6	Mugs Up Drive In	39.079195	-94.406644
7	HiBoy Drive-in	39.102342	-94.427107
8	Mandarin House	39.079720	-94.436977
9	Vivilore	39.087602	-94.449800
10	Bill & Ann's Mugs Up	39.079200	-94.406649
11	Dave's Bakery & Deli	39.092841	-94.417768
12	Back Yard Burgers	39.078553	-94.388742
13	Minsky's Pizza	39.073406	-94.378299
14	Cathay Express	39.106533	-94.392263
15	The Happy Greek	39.078416	-94.401972
16	Pancho's Burritos	39.102040	-94.440117
17	Dunkin'	39.075016	-94.379712
18	Lucky Chinese Buffet	39.066705	-94.414633
19	El Volcan	39.119828	-94.374661
20	Arby's	39.073773	-94.378371
21	Queen Taco	39.079769	-94.437531
22	Dickey's Barbecue Pit	39.076120	-94.414167
23	HiBoy Drive-in	39.071762	-94.379901
24	Pizza Hut	39.077090	-94.414563
25	Englewood Cafe	39.088163	-94.449179
26	Subway	39.079646	-94.434529
27	Subway	39.072835	-94.413932
28	Subway	39.100675	-94.412685
29	Little Caesars Pizza	39.102105	-94.444547
..	...	...	...
68	Burger King	39.077567	-94.381592
69	Hy-Vee Market Grille Express	39.076863	-94.393743
70	Jack's Donuts	39.076881	-94.391132



71	Lao Peking	39.096382	-94.445849
72	Burger King	39.080414	-94.440579
73	Hardee's	39.090499	-94.380617
74	The plaza Market Restaurante	39.087785	-94.448080
75	La Plaza Market Y Restaurant	39.087805	-94.448091
76	Mugs Up	39.087670	-94.448458
77	Marco's Pizza	39.077752	-94.383719
78	Stephys Dairy Treat	39.115526	-94.386797
79	Yum Station	39.115894	-94.387275
80	Gold Lion	39.074887	-94.378403
81	Hong Kong Tea House	39.072025	-94.380954
82	Los Amigos	39.103018	-94.455837
83	Pizza Street	39.056559	-94.413900
84	The Lunch Box	39.057152	-94.418684
85	Tiki-g's	39.055855	-94.415720
86	Rawleigh Products Distr	39.128850	-94.422829
87	Taco Bell	39.080640	-94.446622
88	Chinatown Super Buffet	39.053772	-94.414882
89	Wendy's	39.073985	-94.379785
90	Michaelangelos Grill	39.119643	-94.375546
91	Jalisco Taquerio	39.119622	-94.375532
92	Grampa's Cafe	39.100992	-94.465384
93	Wing Lee	39.120359	-94.374406
94	Goodcents Deli Fresh Subs	39.051065	-94.414534
95	Goodcents Deli Fresh Subs	39.063547	-94.374792
96	Burger King	39.118232	-94.378153
97	McDonald's	39.117411	-94.382684

	Venue_Category
0	Italian Restaurant
1	American Restaurant
2	American Restaurant
3	Pizza Place
4	BBQ Joint
5	German Restaurant
6	Burger Joint
7	Fast Food Restaurant
8	Chinese Restaurant
9	American Restaurant
10	Fast Food Restaurant
11	Bakery
12	Burger Joint
13	Pizza Place
14	Chinese Restaurant
15	Greek Restaurant
16	Mexican Restaurant
17	Donut Shop
18	Chinese Restaurant

19 Mexican Restaurant  
 20 Fast Food Restaurant  
 21 Taco Place  
 22 BBQ Joint  
 23 Burger Joint  
 24 Pizza Place  
 25 Breakfast Spot  
 26 Sandwich Place  
 27 Sandwich Place  
 28 Sandwich Place  
 29 Pizza Place  
 .. ...  
 68 Fast Food Restaurant  
 69 Restaurant  
 70 Bakery  
 71 Chinese Restaurant  
 72 Fast Food Restaurant  
 73 Fast Food Restaurant  
 74 Mexican Restaurant  
 75 Mexican Restaurant  
 76 Burger Joint  
 77 Pizza Place  
 78 Food  
 79 Burger Joint  
 80 Chinese Restaurant  
 81 Food  
 82 Mexican Restaurant  
 83 Pizza Place  
 84 Burrito Place  
 85 Deli / Bodega  
 86 Food  
 87 Fast Food Restaurant  
 88 Chinese Restaurant  
 89 Fast Food Restaurant  
 90 American Restaurant  
 91 Mexican Restaurant  
 92 American Restaurant  
 93 Chinese Restaurant  
 94 Sandwich Place  
 95 Sandwich Place  
 96 Fast Food Restaurant  
 97 Fast Food Restaurant

[98 rows x 4 columns]

	Venue	Venue_Latitude	Venue_Longitude	\
0	Third Street Social	38.912863	-94.375044	
1	Main Slice	38.912532	-94.377365	
2	Llywelyn's Pub	38.912597	-94.375951	

3	Neighborhood Cafe	38.912856	-94.375919
4	Filling Station BBQ	38.911385	-94.375273
5	The Egg & I Restaurants	38.911304	-94.363048
6	Mali Thai Bistro	38.907826	-94.361784
7	Sahara Mediterranean Food	38.905960	-94.362238
8	Johnny Ray's	38.909205	-94.389582
9	Freddy's Frozen Custard & Steakburger	38.916796	-94.401188
10	Longboards	38.909531	-94.363234
11	Thai Spice	38.933284	-94.380362
12	Houlihan's	38.924926	-94.405170
13	Frankie Fairlanes	38.912762	-94.376058
14	Chick-fil-A	38.927276	-94.401247
15	Bricks Pub and Grub	38.912471	-94.376834
16	Ginger Sue's	38.934318	-94.379698
17	Jersey Mike's Subs	38.931218	-94.401090
18	54th Street Grill & Bar	38.914403	-94.363618
19	LaMar's Donuts and Coffee	38.905685	-94.362281
20	Five Guys	38.922862	-94.361509
21	Fiorella's Jack Stack Barbecue	38.932367	-94.411577
22	Waldo Pizza	38.939753	-94.376632
23	Chipotle Mexican Grill	38.921309	-94.359744
24	Habanero's Home of the Flying Pepper	38.903685	-94.357428
25	Pinsa	38.926843	-94.408525
26	Fazoli's	38.910608	-94.363241
27	Siki Japanese Steakhouse & Sushi Bar	38.923412	-94.401580
28	Jason's Deli	38.926689	-94.407928
29	SPIN! Neapolitan Pizza Lee's Summit	38.926770	-94.411000
..	...	...	...
70	Pearl Tavern	38.927217	-94.405536
71	Subway	38.931183	-94.363265
72	Taco Bell	38.922929	-94.359746
73	Taco Bell	38.925388	-94.399502
74	Subway	38.939614	-94.349676
75	Subway - 291	38.909314	-94.363192
76	Perkins Restaurant & Bakery	38.901982	-94.362667
77	Subway	38.911320	-94.450518
78	Papa Murphys	38.916534	-94.339740
79	Applebee's Grill + Bar	38.939536	-94.378012
80	Pizza Hut	38.934413	-94.358561
81	Blue Agave	38.893949	-94.375165
82	On The Border Mexican Grill & Cantina	38.926829	-94.409571
83	Sonic Drive-In	38.852650	-94.378894
84	McDonald's	38.912702	-94.447908
85	Pizza Hut	38.851992	-94.380737
86	Subway	38.854375	-94.379756
87	Fun House Pizza	38.919241	-94.400313
88	Panda Express	38.926589	-94.406204
89	Wendy's	38.925380	-94.400079

90	Sonic	38.852884	-94.370827
91	Taco Bell	38.852351	-94.380695
92	Hy-Vee Market Grille Express	38.909612	-94.397853
93	Goodcents Deli Fresh Subs	38.905975	-94.362215
94	McDonald's	38.925216	-94.399098
95	Fireside (John Knox Village)	38.919175	-94.404760
96	Y-Leave Cafe	38.930679	-94.398109
97	Arby's	38.853224	-94.379895
98	tokyo grill	38.903933	-94.344554
99	Price chopper Lees Summit	38.903535	-94.344628

	Venue_Category
0	American Restaurant
1	Pizza Place
2	Irish Pub
3	Diner
4	BBQ Joint
5	Breakfast Spot
6	Thai Restaurant
7	Mediterranean Restaurant
8	Burger Joint
9	Burger Joint
10	Sandwich Place
11	Thai Restaurant
12	American Restaurant
13	American Restaurant
14	Fast Food Restaurant
15	Restaurant
16	Breakfast Spot
17	Sandwich Place
18	American Restaurant
19	Donut Shop
20	Burger Joint
21	BBQ Joint
22	Pizza Place
23	Mexican Restaurant
24	Mexican Restaurant
25	Pizza Place
26	Italian Restaurant
27	Japanese Restaurant
28	Deli / Bodega
29	Pizza Place
..	...
70	Seafood Restaurant
71	Sandwich Place
72	Fast Food Restaurant
73	Fast Food Restaurant
74	Sandwich Place

75	Sandwich Place
76	American Restaurant
77	Sandwich Place
78	Pizza Place
79	American Restaurant
80	Pizza Place
81	Mexican Restaurant
82	Mexican Restaurant
83	Fast Food Restaurant
84	Fast Food Restaurant
85	Pizza Place
86	Sandwich Place
87	American Restaurant
88	Chinese Restaurant
89	Fast Food Restaurant
90	Fast Food Restaurant
91	Fast Food Restaurant
92	Restaurant
93	Sandwich Place
94	Fast Food Restaurant
95	Restaurant
96	American Restaurant
97	Fast Food Restaurant
98	Sushi Restaurant
99	Bistro

[100 rows x 4 columns]

	Venue	Venue_Latitude	Venue_Longitude	\
0	Old Shawnee Pizza & Italian Kitchen	39.019134	-94.714260	
1	Big Bam's Burgers	39.020937	-94.714801	
2	Firehouse Subs	39.013765	-94.721469	
3	Sushi Mido	39.019573	-94.714900	
4	Oishi Sushi	39.015615	-94.727416	
5	Blind Box BBQ	39.015752	-94.739474	
6	El Pulgarcito	39.021188	-94.693973	
7	Pine & Bamboo Garden	39.014462	-94.712501	
8	First Watch	39.015069	-94.716273	
9	Grandstand Burgers	39.039507	-94.686353	
10	The Big Biscuit	39.015242	-94.728068	
11	Dos Reales	39.012764	-94.722945	
12	Pegah's Family Restaurant - Johnson Dr	39.022874	-94.713728	
13	McAlister's Deli	39.015368	-94.718139	
14	Hurricane Allies Bar And Grill	39.028174	-94.692703	
15	Amigos Grill & Cantina	39.051712	-94.685998	
16	Sarpino's Pizzeria	39.015815	-94.715009	
17	Panera Bread	39.015262	-94.708576	
18	Johnny's Tavern	39.013968	-94.738071	
19	Christy's Tasty Queen	39.074736	-94.704983	

20	SONIC Drive In	39.029884	-94.692664
21	Jimmy John's	39.015076	-94.726509
22	Casa Latina	39.022779	-94.715946
23	Fritz's Railroad Restaurant	39.013832	-94.745458
24	Chipotle Mexican Grill	39.014176	-94.722679
25	Go Chicken Go	39.053631	-94.676798
26	Raising Cane's Chicken Fingers	39.015169	-94.710178
27	Goodcents Deli Fresh Subs	39.015824	-94.739516
28	Carmen's Cocina	39.023595	-94.694518
29	Bates City Bar-B-Que	39.012023	-94.723171
..	...	...	...
51	Taco Bell	39.015390	-94.725645
52	Pizza Hut	39.014180	-94.718950
53	China Garden	39.023883	-94.687297
54	Wendy's	39.015290	-94.719065
55	Pizza Hut	39.050445	-94.684585
56	Tarahumara Mexican Food	39.044927	-94.704539
57	KFC	39.052931	-94.680985
58	McDonald's	39.014061	-94.722024
59	Mad Man's BBQ	39.022778	-94.715124
60	Fiesta Mexican Grill & Cantina	39.022735	-94.726582
61	Applebee's Grill + Bar	39.015268	-94.719419
62	Taco Bell	39.052772	-94.680857
63	Burger King	39.014256	-94.739768
64	Tina Marie's	39.021784	-94.732419
65	Little Caesars Pizza	39.015257	-94.724977
66	Jack in the Box	39.021834	-94.690752
67	Anita's Cuisine	39.023816	-94.694242
68	Mr. Goodcents Subs & Pastas	39.022340	-94.692909
69	Japanese Steak House	39.015628	-94.739503
70	Taco Uno	39.015708	-94.739687
71	A&W	39.015236	-94.701459
72	Lutfi's Fried Fish	39.013508	-94.738710
73	Bimbo Bakery	39.051867	-94.681489
74	IKEA Restaurant	39.019609	-94.690478
75	Subway	39.015178	-94.716895
76	Wonder Bread Bakery Outlet	39.007484	-94.725542
77	Boston Market	39.015149	-94.721400
78	A&W / Long John Silver's	39.015288	-94.701539
79	McDonald's	39.052083	-94.680537
80	Great Wall Chinese Buffet And Sushi	39.013696	-94.723227

	Venue_Category
0	Pizza Place
1	American Restaurant
2	Sandwich Place
3	Sushi Restaurant
4	Sushi Restaurant

5	BBQ Joint
6	Salvadoran Restaurant
7	Chinese Restaurant
8	Breakfast Spot
9	Burger Joint
10	Breakfast Spot
11	Mexican Restaurant
12	Diner
13	Deli / Bodega
14	American Restaurant
15	Mexican Restaurant
16	Pizza Place
17	Bakery
18	American Restaurant
19	American Restaurant
20	Fast Food Restaurant
21	Sandwich Place
22	Latin American Restaurant
23	Burger Joint
24	Mexican Restaurant
25	Fried Chicken Joint
26	Fried Chicken Joint
27	Sandwich Place
28	Mexican Restaurant
29	BBQ Joint
..	...
51	Fast Food Restaurant
52	Pizza Place
53	Chinese Restaurant
54	Fast Food Restaurant
55	Pizza Place
56	Mexican Restaurant
57	Fried Chicken Joint
58	Fast Food Restaurant
59	BBQ Joint
60	Mexican Restaurant
61	American Restaurant
62	Fast Food Restaurant
63	Fast Food Restaurant
64	Bakery
65	Pizza Place
66	Fast Food Restaurant
67	Empanada Restaurant
68	Sandwich Place
69	Japanese Restaurant
70	Taco Place
71	American Restaurant
72	Fish & Chips Shop

73 Bakery  
 74 Cafeteria  
 75 Sandwich Place  
 76 Bakery  
 77 American Restaurant  
 78 Fast Food Restaurant  
 79 Fast Food Restaurant  
 80 Chinese Restaurant

[81 rows x 4 columns]

	Venue	Venue_Latitude	Venue_Longitude \
0	Firehouse Subs	39.024982	-94.272844
1	Pizza Shoppe	39.018518	-94.278126
2	54th Street Grill & Bar	39.003428	-94.273452
3	Original Pizza	39.017111	-94.271950
4	Big Biscuit	39.023104	-94.271619
5	Thailand Restaurant	39.025359	-94.272434
6	LaMar's Donuts and Coffee	39.026025	-94.271425
7	Five Guys	39.025478	-94.246617
8	Mod Pizza	39.025306	-94.247215
9	Real Jalisco	39.034890	-94.271158
10	Planet Sub	39.027157	-94.256448
11	Texas Roadhouse	39.027715	-94.256883
12	Chipotle Mexican Grill	39.025875	-94.248317
13	Taco John's	39.027058	-94.304897
14	Minsky's Pizza	39.044101	-94.271739
15	China One	39.040212	-94.271902
16	Legend of Asia	38.997564	-94.273791
17	Zarda BBQ	39.020358	-94.271211
18	Chick-fil-A	39.026180	-94.250614
19	Mr. Hibachi	39.026147	-94.271401
20	Applebee's Grill + Bar	39.029211	-94.271038
21	Rancho Grande	39.030494	-94.267923
22	Einstein Bros Bagels	39.019828	-94.271660
23	SONIC Drive In	39.002305	-94.272429
24	Fazoli's	39.008761	-94.276157
25	Pancho's	39.008880	-94.274914
26	Olive Garden	39.026630	-94.251855
27	Sinclair's Restaurant	39.034731	-94.271021
28	Corner Cafe	39.035492	-94.341529
29	Jersey Mike's Subs	39.026073	-94.246802
..	...	...	...
70	IHOP	39.010910	-94.356701
71	Casey's General Store	39.007781	-94.212452
72	Subway	39.033187	-94.356696
73	QDOBA Mexican Eats	39.033126	-94.356296
74	Sonic	39.044749	-94.350955
75	Back Yard Burgers	39.004752	-94.203754



76	Papa John's Pizza	39.029652	-94.355532
77	Arby's	39.036602	-94.344038
78	Subway	39.033107	-94.356619
79	Dirty Harry's Bar & Grill	38.988937	-94.272728
80	Five Guys Burgers And Fries	38.989583	-94.265884
81	Golden Corral	39.038756	-94.353237
82	Outback Steakhouse	39.038447	-94.344825
83	Legend of asia	38.980736	-94.273604
84	Popeyes Louisiana Kitchen	39.029509	-94.351756
85	Blue Springs BBQ Blaze Off	39.032853	-94.332626
86	Gambino's Pizza	39.008911	-94.224858
87	Babyback's Rib Shack	39.008901	-94.223514
88	Lions Choice	39.042081	-94.340572
89	california taco shop	39.029328	-94.351114
90	Porkys Blazin Barbq	39.007782	-94.212471
91	Jazz Independence	39.039148	-94.348275
92	Cheezsteak Company	39.034017	-94.355400
93	Pie Five Pizza	39.033127	-94.356155
94	La Fuente Mexican Restaurant	38.989894	-94.350504
95	Goodcents Deli Fresh Subs	39.003878	-94.359796
96	Hot Pots Cafe	39.009834	-94.201627
97	Sandy's Home Cooked Meals	39.009800	-94.201591
98	Taj Mahal	39.048377	-94.353048
99	Burger King	39.047271	-94.350540

	Venue_Category
0	Sandwich Place
1	Pizza Place
2	American Restaurant
3	Pizza Place
4	Breakfast Spot
5	Thai Restaurant
6	Donut Shop
7	Burger Joint
8	Pizza Place
9	Mexican Restaurant
10	Sandwich Place
11	Steakhouse
12	Mexican Restaurant
13	Mexican Restaurant
14	Pizza Place
15	Chinese Restaurant
16	Chinese Restaurant
17	BBQ Joint
18	Fast Food Restaurant
19	Asian Restaurant
20	American Restaurant
21	Mexican Restaurant

22 Bagel Shop  
 23 Fast Food Restaurant  
 24 Restaurant  
 25 Mexican Restaurant  
 26 Italian Restaurant  
 27 Restaurant  
 28 American Restaurant  
 29 Sandwich Place  
 .. ...  
 70 Breakfast Spot  
 71 Pizza Place  
 72 Sandwich Place  
 73 Mexican Restaurant  
 74 Fast Food Restaurant  
 75 Burger Joint  
 76 Pizza Place  
 77 Fast Food Restaurant  
 78 Sandwich Place  
 79 Restaurant  
 80 Sandwich Place  
 81 Buffet  
 82 Steakhouse  
 83 Asian Restaurant  
 84 Fried Chicken Joint  
 85 BBQ Joint  
 86 Pizza Place  
 87 BBQ Joint  
 88 Fast Food Restaurant  
 89 Mexican Restaurant  
 90 Food  
 91 Cajun / Creole Restaurant  
 92 Sandwich Place  
 93 Pizza Place  
 94 Mexican Restaurant  
 95 Sandwich Place  
 96 American Restaurant  
 97 Diner  
 98 Indian Restaurant  
 99 Fast Food Restaurant

[100 rows x 4 columns]

	Venue	Venue_Latitude	Venue_Longitude	\
0	LifeCafe	38.964386	-94.781316	
1	SPIN! Neapolitan Pizza	38.957162	-94.780545	
2	Ignite Wood Fire Grill	38.969597	-94.777840	
3	Freddy's Frozen Custard & Steakburgers	38.971698	-94.774410	
4	Grand Street Cafe	38.968639	-94.778909	
5	Lucky Wok	38.970270	-94.761952	

6	Panera Bread	38.970004	-94.762692
7	Minsky's Pizza	38.998257	-94.780601
8	Paulo and Bill	38.998895	-94.777428
9	Jose Pepper's	38.998450	-94.778165
10	Brewbakers	38.956985	-94.780649
11	Goodcents Deli Fresh Subs	38.954943	-94.761972
12	Hereford House	39.002017	-94.786235
13	Sushi UNI	38.970482	-94.735239
14	Old Shawnee Pizza	38.943413	-94.813985
15	Chartroose Caboose	38.971470	-94.736379
16	Chen's Kitchen	38.998686	-94.780519
17	Papa Murphy's	38.971797	-94.759124
18	KC Grill N Kabob	38.972188	-94.738472
19	SONIC Drive In	38.970521	-94.769011
20	Jimmy John's	38.957624	-94.780466
21	Eggtc.	38.998429	-94.780608
22	Taco Bell	38.971601	-94.773827
23	Rumman Mediterranean Cuisine	38.972170	-94.758995
24	Goodcents Deli Fresh Subs	38.939113	-94.798151
25	Papa Johns Pizza	38.972002	-94.773580
26	Papa John's Pizza	38.970565	-94.767023
27	Papa Murphy's	38.945866	-94.817635
28	Gambino's Pizza	38.969967	-94.766998
29	Wendy's	38.998443	-94.779257
30	Lenexa BBQ	38.969624	-94.758701
31	Wendy's	38.955635	-94.761424
32	Blue Moose	38.946024	-94.816951
33	Subway	38.971463	-94.739631
34	Salty Iguana	38.938856	-94.798096
35	Subway	38.944361	-94.814484
36	Subway	38.998919	-94.779092
37	Mad Man's KC BBQ	38.970698	-94.784216
38	Chewology	38.970013	-94.783870
39	Topp'd	38.969782	-94.783932
40	Grand Street Cafe	38.968773	-94.778894
41	Pizza Hut	38.971597	-94.744352
42	Silo Modern Farmhouse	38.970137	-94.793474
43	Hibachi Go	38.959335	-94.780330
44	The Rub Bar-B-Que	38.938037	-94.798172
45	Nature's Table Cafe	38.955004	-94.777980
46	Adrian's Cafe	38.955227	-94.776391
47	Daylight Donuts	38.969914	-94.761399
48	McDonald's	38.971517	-94.772772
49	Rice House	38.971476	-94.759230
50	Burger King	38.936650	-94.798239
51	Yos Donuts	38.998715	-94.780502
52	Embassy Suites Breakfast/Happy Hour	38.939636	-94.796555
53	Minskys Pizza	38.937593	-94.797933

54	Aso Sushi	38.972772	-94.738305
55	ASA Restaurant	38.945806	-94.817876
56	Wendy's	38.943194	-94.815300

	Venue_Category
0	Café
1	Pizza Place
2	New American Restaurant
3	Fast Food Restaurant
4	American Restaurant
5	Chinese Restaurant
6	Bakery
7	Pizza Place
8	Italian Restaurant
9	Mexican Restaurant
10	Gastropub
11	Sandwich Place
12	Steakhouse
13	Sushi Restaurant
14	Pizza Place
15	Sandwich Place
16	Chinese Restaurant
17	Pizza Place
18	Mediterranean Restaurant
19	Fast Food Restaurant
20	Sandwich Place
21	Breakfast Spot
22	Fast Food Restaurant
23	Mediterranean Restaurant
24	Sandwich Place
25	Pizza Place
26	Pizza Place
27	Pizza Place
28	Pizza Place
29	Fast Food Restaurant
30	BBQ Joint
31	Fast Food Restaurant
32	American Restaurant
33	Sandwich Place
34	Mexican Restaurant
35	Sandwich Place
36	Sandwich Place
37	BBQ Joint
38	Asian Restaurant
39	Pizza Place
40	Restaurant
41	Pizza Place
42	Restaurant

43 Asian Restaurant  
 44 BBQ Joint  
 45 Café  
 46 Sandwich Place  
 47 Donut Shop  
 48 Fast Food Restaurant  
 49 Chinese Restaurant  
 50 Fast Food Restaurant  
 51 Donut Shop  
 52 Breakfast Spot  
 53 Pizza Place  
 54 Sushi Restaurant  
 55 Sushi Restaurant  
 56 Fast Food Restaurant

	Venue	Venue_Latitude	Venue_Longitude	\
0	Tampico Authentic Mexican Restaurant	39.318357	-94.911382	
1	Pullman Place Family Restaurant	39.317640	-94.911751	
2	Baan Thai Restaurant	39.317044	-94.913218	
3	Grinders High Noon	39.316931	-94.910901	
4	Ten Penny Restaurant & Bar	39.316800	-94.916582	
5	Homer's Drive In	39.310387	-94.910013	
6	Mama Mia's	39.314900	-94.951067	
7	Luigi's Italian Restaurant	39.316968	-94.918392	
8	Metropolitan Steak House	39.327258	-94.940978	
9	Casey's General Store	39.310684	-94.951877	
10	Subway	39.300323	-94.927982	
11	Goodcents Deli Fresh Subs	39.288078	-94.904757	
12	Pizza Hut	39.311220	-94.911945	
13	Domino's Pizza	39.311027	-94.913397	
14	SONIC Drive In	39.294660	-94.937664	
15	Einstein Bros. Bagels	39.344263	-94.916020	
16	Acapulco Mexican Grill	39.327116	-94.920582	
17	Papa John's Pizza	39.300835	-94.909250	
18	Papa Murphy's	39.285270	-94.905131	
19	Charleys Philly Steaks	39.344524	-94.916800	
20	Subway	39.287426	-94.907032	
21	Little Caesars Pizza	39.327843	-94.921239	
22	Subway	39.346917	-94.916621	
23	Church's Chicken	39.339822	-94.924540	
24	SONIC Drive In	39.327268	-94.915153	
25	SONIC Drive In	39.285232	-94.903380	
26	The Depot	39.317681	-94.922490	
27	Subway	39.327734	-94.914805	
28	Bakery Delicateza	39.314148	-94.914694	
29	Hyundai Korean	39.318092	-94.920808	
30	Retro Dinner	39.311171	-94.913575	
31	KFC	39.296556	-94.909275	
32	Junes Cottage & Restaurant	39.319591	-94.921920	

33	Karma Cakes	39.317989	-94.916085
34	Luigi's Modern Italian Cuisine	39.317230	-94.914540
35	Nu-Way Drive In	39.318881	-94.916221
36	A & W	39.285627	-94.903884
37	King House	39.319868	-94.915855
38	Family Bistro & Sushi Bar	39.317401	-94.911669
39	Daylight Donuts	39.306746	-94.910038
40	Ten Penny Restaurant & Bar	39.300233	-94.926982
41	Taco Bell	39.339874	-94.924450
42	Long John Silver's	39.285595	-94.903990
43	Excellent Choice	39.326545	-94.920154
44	The Natural Well	39.327985	-94.924958
45	Taco Bell	39.287873	-94.905520
46	Burger King	39.337816	-94.923088
47	Wendy's	39.288102	-94.906731
48	McDonald's	39.285982	-94.904266
49	FouCakes	39.287175	-94.905514
50	China buffet	39.286857	-94.906068
51	Charleys Philly Steaks	39.339847	-94.924543
52	Sonic Drive-In	39.285392	-94.903245
53	New China Inn	39.282414	-94.901580
54	Subway	39.344570	-94.915460
55	Applebee's Grill + Bar	39.287812	-94.906495

	Venue_Category
0	Mexican Restaurant
1	American Restaurant
2	Thai Restaurant
3	Pizza Place
4	American Restaurant
5	American Restaurant
6	Italian Restaurant
7	Italian Restaurant
8	Steakhouse
9	Pizza Place
10	Sandwich Place
11	Sandwich Place
12	Pizza Place
13	Pizza Place
14	Fast Food Restaurant
15	Bagel Shop
16	Mexican Restaurant
17	Pizza Place
18	Pizza Place
19	Sandwich Place
20	Sandwich Place
21	Pizza Place
22	Sandwich Place

23 Fried Chicken Joint  
 24 Fast Food Restaurant  
 25 Fast Food Restaurant  
 26 Breakfast Spot  
 27 Sandwich Place  
 28 Bakery  
 29 Korean Restaurant  
 30 American Restaurant  
 31 Fried Chicken Joint  
 32 American Restaurant  
 33 Bakery  
 34 Italian Restaurant  
 35 Burger Joint  
 36 American Restaurant  
 37 Chinese Restaurant  
 38 Diner  
 39 Donut Shop  
 40 BBQ Joint  
 41 Fast Food Restaurant  
 42 Fast Food Restaurant  
 43 Fish & Chips Shop  
 44 Café  
 45 Fast Food Restaurant  
 46 Fast Food Restaurant  
 47 Fast Food Restaurant  
 48 Fast Food Restaurant  
 49 Bakery  
 50 Chinese Restaurant  
 51 Sandwich Place  
 52 Fast Food Restaurant  
 53 Chinese Restaurant  
 54 Sandwich Place  
 55 American Restaurant

	Venue	Venue_Latitude	Venue_Longitude	\
0	Chick-fil-A	38.973380	-94.607780	
1	Five Guys	38.970423	-94.607259	
2	Charlestons	38.967914	-94.607025	
3	Firehouse Subs	38.970856	-94.607398	
4	Panera Bread	38.977914	-94.631124	
5	Dewey's Pizza	38.956498	-94.627741	
6	Red Snapper	38.975384	-94.607249	
7	Smitty's Garage	38.968223	-94.606596	
8	O'Neill's Restaurant & Bar	38.958105	-94.629971	
9	BRGR Kitchen + Bar	38.979629	-94.632259	
10	Great Harvest Bread Co.	38.979593	-94.631513	
11	SPIN! Neapolitan Pizza	38.980262	-94.630475	
12	Planet Sub	38.957971	-94.630932	
13	Urban Table	38.979665	-94.631326	

14	Tasso's Greek Restaurant	38.976060	-94.594776
15	Chelly's Cafe	38.974521	-94.593870
16	Jun's Japanese Restaurant	38.989226	-94.609214
17	Tatsu's French Restaurant	38.965856	-94.638585
18	Noodles & Company	38.990314	-94.608692
19	Sarpino's Pizzeria	38.957503	-94.629424
20	Jasper's Italian Restaurant	38.941337	-94.605616
21	Popeyes Louisiana Kitchen	38.944041	-94.607776
22	The Big Biscuit	38.957232	-94.648267
23	Salty Iguana	38.979825	-94.631227
24	Panera Bread	38.942898	-94.607760
25	Princess Garden Restaurant	38.966338	-94.595966
26	Wendy's	38.984159	-94.607853
27	Chipotle Mexican Grill	38.943100	-94.607692
28	Marco Polo's	38.941508	-94.605679
29	Rainbow China	38.982505	-94.607761
..	...	...	...
40	Subway	38.982559	-94.607895
41	Subway	38.978948	-94.630921
42	First Watch	38.978364	-94.632716
43	Domino's Pizza	38.956282	-94.645607
44	Marble Top Cafe	38.975225	-94.607460
45	Subway	38.942176	-94.606431
46	Cafe Ha Tien	38.942166	-94.605771
47	KC Smokehouse BBQ	38.974862	-94.594961
48	Look At The Bright Side	38.969091	-94.609130
49	Church's Chicken	38.975605	-94.595434
50	Happy Dragon	38.942792	-94.606688
51	McDonald's	38.957185	-94.629995
52	Sonic Drive-In	38.978485	-94.594487
53	Zoe's Cafe	38.967540	-94.605150
54	McDonald's	38.985994	-94.607695
55	Duck Donuts	38.957535	-94.627636
56	Elite Cuisine at Burns & Mac	38.957927	-94.599422
57	Burger State	38.965970	-94.595954
58	GameDay Chicken Wings Burgers & Fish	38.965601	-94.595960
59	Dragon Inn	38.978878	-94.631998
60	Long John Silvers	38.974411	-94.595913
61	Taco Bell	38.941726	-94.607685
62	KFC	38.974550	-94.596001
63	Oriental Express	38.975590	-94.595445
64	Waldo Thai Place	38.974991	-94.594574
65	McDonald's	38.976345	-94.595354
66	Subway	38.988237	-94.607534
67	SunRice	38.956561	-94.645493
68	Jasper's Italian Restaurant	38.941470	-94.605630
69	Taco Bell	38.979078	-94.594487



	Venue_Category
0	Fast Food Restaurant
1	Burger Joint
2	New American Restaurant
3	Sandwich Place
4	Bakery
5	Pizza Place
6	Chinese Restaurant
7	Burger Joint
8	Restaurant
9	Burger Joint
10	Bakery
11	Pizza Place
12	Sandwich Place
13	Café
14	Greek Restaurant
15	Mexican Restaurant
16	Sushi Restaurant
17	French Restaurant
18	Restaurant
19	Pizza Place
20	Italian Restaurant
21	Fried Chicken Joint
22	Breakfast Spot
23	Mexican Restaurant
24	Sandwich Place
25	Chinese Restaurant
26	Fast Food Restaurant
27	Mexican Restaurant
28	Italian Restaurant
29	Chinese Restaurant
..	...
40	Sandwich Place
41	Sandwich Place
42	Breakfast Spot
43	Pizza Place
44	Mediterranean Restaurant
45	Sandwich Place
46	Vietnamese Restaurant
47	BBQ Joint
48	Sandwich Place
49	Fried Chicken Joint
50	Chinese Restaurant
51	Fast Food Restaurant
52	Fast Food Restaurant
53	Food
54	Fast Food Restaurant
55	Donut Shop

56 Food Court  
 57 Burger Joint  
 58 Fried Chicken Joint  
 59 Chinese Restaurant  
 60 Fish & Chips Shop  
 61 Fast Food Restaurant  
 62 Fried Chicken Joint  
 63 Chinese Restaurant  
 64 Thai Restaurant  
 65 Fast Food Restaurant  
 66 Sandwich Place  
 67 Chinese Restaurant  
 68 Indian Restaurant  
 69 Fast Food Restaurant

[70 rows x 4 columns]

	Venue	Venue_Latitude	Venue_Longitude \
0	Ginger Sue's	39.246264	-94.420950
1	Morning Day Cafe	39.246986	-94.420044
2	Longboards	39.243958	-94.440379
3	Rancho Grande	39.238959	-94.435521
4	La Costa Mexican Restaurant	39.246083	-94.420121
5	Firehouse Subs	39.246730	-94.445986
6	Conrad's Restaurant & Alehouse	39.246057	-94.445865
7	Sorella's	39.246340	-94.418381
8	Texas Roadhouse	39.246373	-94.453796
9	Chick-fil-A	39.245165	-94.451844
10	Luigi's Italian Restaurant and Wine Bar	39.246781	-94.420060
11	Minsky's Pizza	39.246330	-94.444110
12	Hardee's	39.237152	-94.434962
13	Margarita's	39.243677	-94.451040
14	Corner Cafe	39.243380	-94.464960
15	Pizza Shoppe	39.246450	-94.459764
16	MOD Pizza	39.245696	-94.449437
17	Tasty Thai	39.245202	-94.449668
18	Blaze Pizza	39.244040	-94.452132
19	54th Street Grill & Bar	39.244009	-94.463260
20	Raising Cane's Chicken Fingers	39.244965	-94.444360
21	Nicky's Pizza	39.269224	-94.452877
22	Masabi Japanese Sushi Bar & Grill	39.268949	-94.453269
23	The Big Biscuit	39.237683	-94.436166
24	Sonic Drive-In	39.268801	-94.453553
25	LaMar's Donuts and Coffee	39.243927	-94.441286
26	Panera Bread	39.246293	-94.459651
27	Seva Cuisine of India	39.247511	-94.466241
28	Joy Wok	39.242339	-94.462437
29	Subway	39.238695	-94.436223
30	Buffalo Wild Wings	39.244383	-94.468520

31	Red Robin Gourmet Burgers and Brews	39.245137	-94.450281
32	Zaxby's Chicken Fingers & Buffalo Wings	39.266997	-94.448460
33	Moonlight Sushi Bar & Grill	39.247560	-94.466285
34	Waffle House	39.245145	-94.459733
35	First Watch	39.244161	-94.478189
36	Old Chicago Pizza & Taproom	39.243293	-94.476634
37	Kam Sheng	39.269014	-94.452620
38	Five Guys	39.245945	-94.451493
39	Chipotle Mexican Grill	39.247727	-94.465937
40	Freddy's Frozen Custard	39.245195	-94.458655
41	Noodles & Company	39.245541	-94.466438
42	Jimmy John's	39.243828	-94.450936
43	Planet Sub	39.245844	-94.450499
44	Hy-Vee Food Court	39.245726	-94.447367
45	Olive Garden	39.244799	-94.448709
46	McAllisters Deli	39.243077	-94.452830
47	Pepperjax Grill	39.243689	-94.466938
48	Cracker Barrel Old Country Store	39.241345	-94.459712
49	First Watch	39.244437	-94.473995
50	Jade Garden	39.236187	-94.435732
51	China Gourmet	39.236350	-94.435924
52	Chick-Fil-A	39.231338	-94.386395
53	54th st Bar And Grill	39.225946	-94.469282
54	Connie's Restaurant	39.259464	-94.360937
55	Pizza Shoppe	39.227821	-94.493389

	Venue_Category
0	Breakfast Spot
1	Café
2	Sandwich Place
3	Mexican Restaurant
4	Mexican Restaurant
5	Sandwich Place
6	American Restaurant
7	Deli / Bodega
8	Steakhouse
9	Fast Food Restaurant
10	Italian Restaurant
11	Pizza Place
12	Fast Food Restaurant
13	Mexican Restaurant
14	Bakery
15	Pizza Place
16	Pizza Place
17	Thai Restaurant
18	Pizza Place
19	Gastropub
20	Fried Chicken Joint

21 Pizza Place  
 22 Sushi Restaurant  
 23 Breakfast Spot  
 24 Fast Food Restaurant  
 25 Donut Shop  
 26 Bakery  
 27 Indian Restaurant  
 28 Chinese Restaurant  
 29 Sandwich Place  
 30 Wings Joint  
 31 Burger Joint  
 32 Fried Chicken Joint  
 33 Japanese Restaurant  
 34 Breakfast Spot  
 35 Breakfast Spot  
 36 Pizza Place  
 37 Chinese Restaurant  
 38 Burger Joint  
 39 Mexican Restaurant  
 40 Burger Joint  
 41 Noodle House  
 42 Sandwich Place  
 43 Sandwich Place  
 44 Food Court  
 45 Italian Restaurant  
 46 Deli / Bodega  
 47 Restaurant  
 48 American Restaurant  
 49 Breakfast Spot  
 50 Chinese Restaurant  
 51 Chinese Restaurant  
 52 Fast Food Restaurant  
 53 American Restaurant  
 54 Food  
 55 Pizza Place

	Venue	Venue_Latitude	Venue_Longitude \
0	Goodcents Deli Fresh Subs	39.009376	-94.461561
1	El Maguey Mexican Restaurant	39.003263	-94.463989
2	Las Chili's	39.010293	-94.467226
3	Chipotle Mexican Grill	38.994398	-94.474550
4	Firehouse Subs	39.046640	-94.446022
5	Mama China	39.002572	-94.463310
6	Salvatore's Italian Ristorante	39.038579	-94.429263
7	Big Boy Burgers	39.042031	-94.433590
8	Ridgewood Donuts and Bakery	39.043076	-94.437746
9	Peachtree Buffet	39.031134	-94.504341
10	Fun House Pizza & Pub	39.037470	-94.426209
11	Gates Bar-B-Q	39.053308	-94.454891

12	V's Italiano Ristorante	39.050445	-94.450372
13	Jimmy John's	38.994305	-94.474610
14	Papa Murphy's	38.996102	-94.476914
15	Wingstop	39.045266	-94.439932
16	Subway	38.994501	-94.472413
17	Chipotle Mexican Grill	39.046575	-94.446962
18	Pepperjax Grill	39.046684	-94.445671
19	Shanghai Express	39.006848	-94.463794
20	IHOP	38.986527	-94.463934
21	Blue Yuu	39.008855	-94.467040
22	Papa John's Pizza	38.991891	-94.468652
23	Pizza Hut	39.000764	-94.462968
24	Arby's	38.996383	-94.475625
25	Subway	39.051037	-94.449852
26	Subway	39.045639	-94.443401
27	Subway	39.047940	-94.475152
28	SONIC Drive In	39.052222	-94.451854
29	Olive Garden	39.036035	-94.416553
..	...	...	...
51	Wonder Hostess	39.002304	-94.463067
52	Lutfis Fried Fish	39.001956	-94.463278
53	East Buffet	39.044991	-94.439551
54	Dough Boys	39.007190	-94.445581
55	Gingers	39.007049	-94.445548
56	Burger King	39.050255	-94.474307
57	Church's Chicken	38.994303	-94.472072
58	Stumble's Public House	38.993518	-94.472783
59	China Town	38.992773	-94.469654
60	China Town	38.988235	-94.469649
61	Fiesta Azteca	38.986045	-94.464430
62	Lws Management Co	38.985413	-94.464434
63	McDonald's	39.045799	-94.441155
64	KMBC Lunchroom	39.007045	-94.503193
65	McDonald's	39.031371	-94.503598
66	Thai Spice	39.046641	-94.445113
67	Saer Chicken Coop	39.042553	-94.434500
68	Samurai Chef Steak House	39.037761	-94.427357
69	Steak 'n Shake	39.035405	-94.419457
70	Peach Tree	39.030636	-94.504490
71	Bimbo Orowheat Bakery store	39.043435	-94.433566
72	Casey's Sports Bar And Grill	39.051705	-94.471359
73	Ararat Club	39.033441	-94.503929
74	Paddy O'Quigley's Sports Cmplx	39.052400	-94.471688
75	Frank White Lounge	39.051169	-94.480225
76	Denny's	39.052902	-94.474432
77	The Kansas City Baking Company	39.051234	-94.481490
78	Hot Corner Grill (Loge Level)	39.051425	-94.481125
79	China Feast	39.057820	-94.466385

80	Taco Bell	39.042599	-94.434599
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	Venue_Category
0	Sandwich Place
1	Mexican Restaurant
2	Mexican Restaurant
3	Mexican Restaurant
4	Sandwich Place
5	Chinese Restaurant
6	Italian Restaurant
7	Burger Joint
8	Bakery
9	Southern / Soul Food Restaurant
10	Pizza Place
11	BBQ Joint
12	Italian Restaurant
13	Sandwich Place
14	Pizza Place
15	Wings Joint
16	Sandwich Place
17	Mexican Restaurant
18	American Restaurant
19	Chinese Restaurant
20	Breakfast Spot
21	Asian Restaurant
22	Pizza Place
23	Pizza Place
24	Fast Food Restaurant
25	Sandwich Place
26	Sandwich Place
27	Sandwich Place
28	Fast Food Restaurant
29	Italian Restaurant
..	...
51	Bakery
52	Fish & Chips Shop
53	Asian Restaurant
54	Deli / Bodega
55	Diner
56	Fast Food Restaurant
57	Fried Chicken Joint
58	Restaurant
59	Chinese Restaurant
60	Chinese Restaurant
61	Mexican Restaurant
62	Food
63	Fast Food Restaurant
64	Cafeteria

65	Fast Food Restaurant
66	Thai Restaurant
67	Fried Chicken Joint
68	Japanese Restaurant
69	American Restaurant
70	Food
71	Bakery
72	American Restaurant
73	American Restaurant
74	Food
75	Hot Dog Joint
76	Diner
77	Bakery
78	Food Court
79	Chinese Restaurant
80	Fast Food Restaurant

[81 rows x 4 columns]

	Venue	Venue_Latitude	Venue_Longitude \
0	Longboards	39.207782	-94.575900
1	Kate's Kitchen	39.239451	-94.576766
2	Minsky's Pizza	39.246039	-94.577640
3	El Maguey	39.236467	-94.575569
4	Smokehouse Barbecue-Gladstone Mo	39.209058	-94.577106
5	Margarita's Mexican Restaurant	39.222086	-94.575680
6	Wasahi Japanese Steak House & Sushi Bar	39.224946	-94.576277
7	Hunan Garden	39.210136	-94.547455
8	Red Lobster	39.246737	-94.585282
9	Mi Ranchito	39.198199	-94.576838
10	54th Street Grill & Bar	39.193632	-94.579250
11	Panera Bread	39.195324	-94.577807
12	Giovanni's Italian Deli & Pasta	39.204782	-94.548963
13	Casey's General Store	39.237650	-94.575415
14	Señor Tequila	39.212869	-94.576662
15	Latin Bistro	39.221032	-94.576580
16	Chipotle Mexican Grill	39.195433	-94.580277
17	Leo's Pizza	39.196698	-94.586493
18	Pizza Street	39.193946	-94.578489
19	Asian Buffet	39.246243	-94.587766
20	The Big Biscuit	39.193726	-94.549644
21	Wings Cafe	39.196822	-94.587574
22	Five Guys	39.189051	-94.548300
23	Tokyo Japanese Steak House	39.245957	-94.581527
24	Olive Garden	39.246838	-94.586662
25	Corner Cafe	39.177615	-94.612503
26	Hayes Hamburgers & Chili	39.185771	-94.550144
27	Stroud's Restaurant & Bar	39.194661	-94.512918
28	Captain D's	39.219190	-94.576533

29	Trezo Mare	39.168688	-94.596973
..	...	...	...
70	Panda Express	39.184596	-94.576040
71	Sonic	39.258703	-94.576690
72	Waffle House	39.174356	-94.549162
73	Arby's	39.184084	-94.576027
74	Papa Murphy's	39.172989	-94.534353
75	Ming Garden	39.173897	-94.534844
76	Pizza Hut	39.226333	-94.575717
77	Subway	39.181152	-94.602645
78	Arby's	39.248870	-94.575420
79	Judge's Bar & Grill	39.187839	-94.545251
80	Subway	39.171050	-94.576549
81	Taco Bell	39.209321	-94.575824
82	Pizza Shoppe	39.262961	-94.574047
83	Subway	39.211587	-94.645305
84	Subway	39.241122	-94.522660
85	Little Caesars Pizza	39.198458	-94.549148
86	Carlitos Mexican Food	39.239654	-94.576612
87	Church's Chicken	39.187777	-94.525581
88	Subway	39.246020	-94.582228
89	Subway	39.196537	-94.588039
90	Subway	39.188359	-94.523668
91	Perkins Restaurant & Bakery	39.207852	-94.576746
92	Domino's Pizza	39.172308	-94.549704
93	Dunkin'	39.203295	-94.548909
94	Pizza Hut	39.266650	-94.577450
95	Taco Bell	39.246680	-94.574420
96	Subway	39.174055	-94.534766
97	Pizza Hut	39.187829	-94.543940
98	Domino's Pizza	39.263225	-94.577366
99	Jimmy John's	39.193995	-94.579289

	Venue_Category
0	Sandwich Place
1	Breakfast Spot
2	Pizza Place
3	Mexican Restaurant
4	BBQ Joint
5	Mexican Restaurant
6	Sushi Restaurant
7	Chinese Restaurant
8	Seafood Restaurant
9	Mexican Restaurant
10	American Restaurant
11	Bakery
12	Italian Restaurant
13	Pizza Place



14	Mexican Restaurant
15	Latin American Restaurant
16	Mexican Restaurant
17	Pizza Place
18	Pizza Place
19	Chinese Restaurant
20	Breakfast Spot
21	Wings Joint
22	Burger Joint
23	Japanese Restaurant
24	Italian Restaurant
25	American Restaurant
26	Burger Joint
27	Fried Chicken Joint
28	Seafood Restaurant
29	Italian Restaurant
..	...
70	Chinese Restaurant
71	Fast Food Restaurant
72	Breakfast Spot
73	Fast Food Restaurant
74	Pizza Place
75	Chinese Restaurant
76	Pizza Place
77	Sandwich Place
78	Fast Food Restaurant
79	American Restaurant
80	Sandwich Place
81	Fast Food Restaurant
82	Pizza Place
83	Sandwich Place
84	Sandwich Place
85	Pizza Place
86	Mexican Restaurant
87	Fried Chicken Joint
88	Sandwich Place
89	Sandwich Place
90	Sandwich Place
91	American Restaurant
92	Pizza Place
93	Donut Shop
94	Pizza Place
95	Fast Food Restaurant
96	Sandwich Place
97	Pizza Place
98	Pizza Place
99	Sandwich Place

[100 rows x 4 columns]

	Venue	Venue_Latitude	Venue_Longitude	\
0	Providence Pizza	38.889100	-94.523621	
1	Campestre Mexican Restaraunt	38.889612	-94.536552	
2	Captain D's	38.888374	-94.523269	
3	McAlister's Deli	38.901354	-94.525357	
4	Chipotle Mexican Grill	38.902037	-94.525274	
5	Grandview Buffet	38.900491	-94.532297	
6	Subway	38.902779	-94.530848	
7	Papa John's Pizza	38.906342	-94.527022	
8	Fish City	38.914128	-94.514596	
9	Little Caesars Pizza	38.888280	-94.521503	
10	Waffle House	38.889249	-94.526928	
11	SONIC Drive In	38.858787	-94.522668	
12	Pizza Hut	38.873050	-94.527578	
13	Pizza Hut	38.898558	-94.541262	
14	Hardee's	38.904950	-94.528320	
15	Sonic Drive-in	38.858727	-94.522690	
16	Taco Bell	38.889510	-94.526027	
17	Subway	38.858710	-94.521912	
18	Popeyes Louisiana Kitchen	38.888442	-94.523649	
19	Church's Chicken	38.915331	-94.514211	
20	El Alteño Mexican Grill	38.888861	-94.526961	
21	Corner Mexican Food	38.890200	-94.537285	
22	Open Road Bar & Grill	38.889808	-94.538646	
23	Arby's	38.906424	-94.525772	
24	Ranch Cafe	38.893590	-94.525689	
25	Tastykake Bakery Outlet	38.895038	-94.525563	
26	Flowers/wonder bakery depot	38.895035	-94.525454	
27	McDonald's	38.899419	-94.532296	
28	TJ's Café	38.899946	-94.533331	
29	Topsy's Popcorn	38.902618	-94.527519	
30	Peking Express	38.904375	-94.530342	
31	Lufti's	38.904490	-94.527401	
32	Taco Bell	38.925233	-94.523829	
33	Wingbusters	38.908453	-94.524861	
34	Wingz & More	38.908473	-94.524865	
35	Wing Busters Grandview	38.908455	-94.524847	
36	Pizza Hut	38.906758	-94.526692	
37	Wendy's	38.907290	-94.525772	
38	SONIC Drive In	38.901349	-94.533546	
39	Burger King	38.889470	-94.523684	
40	Spring China	38.913842	-94.512945	
41	Subway By Sonic	38.858847	-94.521906	
42	Subway	38.858034	-94.524357	
43	KFC	38.907059	-94.526015	
44	IHOP	38.904110	-94.525129	
45	McDonald's	38.924759	-94.523649	

	Venue_Category
0	Pizza Place
1	Mexican Restaurant
2	Seafood Restaurant
3	Deli / Bodega
4	Mexican Restaurant
5	Chinese Restaurant
6	Sandwich Place
7	Pizza Place
8	Fish & Chips Shop
9	Pizza Place
10	Breakfast Spot
11	Fast Food Restaurant
12	Pizza Place
13	Pizza Place
14	Fast Food Restaurant
15	Fast Food Restaurant
16	Fast Food Restaurant
17	Sandwich Place
18	Fried Chicken Joint
19	Fried Chicken Joint
20	Mexican Restaurant
21	Mexican Restaurant
22	Steakhouse
23	Fast Food Restaurant
24	Café
25	Bakery
26	Bakery
27	Fast Food Restaurant
28	Diner
29	Snack Place
30	Chinese Restaurant
31	Fish & Chips Shop
32	Fast Food Restaurant
33	Fried Chicken Joint
34	Wings Joint
35	American Restaurant
36	Pizza Place
37	Fast Food Restaurant
38	Fast Food Restaurant
39	Fast Food Restaurant
40	Chinese Restaurant
41	Fast Food Restaurant
42	Deli / Bodega
43	Fried Chicken Joint
44	Breakfast Spot
45	Fast Food Restaurant

	Venue	Venue_Latitude	Venue_Longitude	\
0	Snack Shack	38.821047	-94.534700	
1	Jose Peppers	38.814201	-94.516562	
2	Casa Mexico	38.814458	-94.521729	
3	Panera Bread	38.813197	-94.515180	
4	Brewbakers Bar & Grill	38.815057	-94.508641	
5	LongHorn Steakhouse	38.814036	-94.514894	
6	Cracker Barrel Old Country Store	38.825680	-94.519126	
7	Texas Roadhouse	38.810323	-94.503129	
8	Buffalo Wild Wings	38.813321	-94.515917	
9	Freddy's Frozen Custard & Steakburgers	38.813703	-94.505860	
10	Lorenzo's	38.813478	-94.520899	
11	Kneaders Bakery And Café	38.822758	-94.524170	
12	Papa Murphy's	38.814007	-94.513072	
13	Fazoli's	38.823434	-94.523440	
14	The Little Pig	38.814108	-94.534685	
15	The Family Cabin Restaurant	38.820165	-94.533960	
16	Casey's General Store	38.827620	-94.516360	
17	Jimmy Johns	38.814206	-94.519935	
18	Little Caesars Pizza	38.813492	-94.520600	
19	Domino's Pizza	38.814528	-94.521926	
20	Chipotle Mexican Grill	38.814006	-94.510089	
21	Long John Silvers / A&W Root Beer	38.814214	-94.515953	
22	Ruby Tuesday	38.814171	-94.514255	
23	Applebee's Grill + Bar	38.814280	-94.517808	
24	Taras Cafe and Malt Shop	38.811786	-94.532225	
25	Mary's Mountain Cookies	38.811430	-94.531720	
26	IHOP	38.811161	-94.504510	
27	Waffle House	38.812088	-94.501255	
28	Bill & Deb's Cafe	38.814598	-94.529974	
29	J & L Diner	38.814705	-94.530004	
30	Taco Bell	38.812438	-94.500503	
31	SONIC Drive In	38.814286	-94.532973	
32	Subway	38.813964	-94.507675	
33	The Best Burrito	38.814380	-94.521714	
34	Chinese Wok	38.813499	-94.520972	
35	Arby's	38.814043	-94.510852	
36	Hawaiian Bros	38.814163	-94.515878	
37	Royal Gyros	38.813929	-94.512917	
38	PepperJax Grill	38.812962	-94.508336	
39	Sonic	38.810602	-94.504322	
40	Burger King	38.812660	-94.501127	
41	McDonald's	38.812997	-94.506855	

	Venue_Category
0	American Restaurant
1	Mexican Restaurant
2	Mexican Restaurant

3	Sandwich Place
4	Gastropub
5	Steakhouse
6	American Restaurant
7	Steakhouse
8	Wings Joint
9	Burger Joint
10	Italian Restaurant
11	Bakery
12	Pizza Place
13	Italian Restaurant
14	BBQ Joint
15	American Restaurant
16	Pizza Place
17	Sandwich Place
18	Pizza Place
19	Pizza Place
20	Mexican Restaurant
21	Fast Food Restaurant
22	American Restaurant
23	American Restaurant
24	American Restaurant
25	Bakery
26	Breakfast Spot
27	Breakfast Spot
28	Breakfast Spot
29	Diner
30	Fast Food Restaurant
31	Fast Food Restaurant
32	Sandwich Place
33	Mexican Restaurant
34	Chinese Restaurant
35	Fast Food Restaurant
36	Hawaiian Restaurant
37	Middle Eastern Restaurant
38	Sandwich Place
39	Fast Food Restaurant
40	Fast Food Restaurant
41	Fast Food Restaurant

	Venue	Venue_Latitude	Venue_Longitude	\
0	BRGR Kitchen + Bar	38.979629	-94.632259	
1	Panera Bread	38.977914	-94.631124	
2	Cafe Provence	39.002451	-94.631419	
3	story.	39.002097	-94.631349	
4	Great Harvest Bread Co.	38.979593	-94.631513	
5	SPIN! Neapolitan Pizza	38.980262	-94.630475	
6	Dolce Bakery	39.002498	-94.631343	
7	Tavern in the Village	39.003475	-94.630660	

8	Urban Table	38.979665	-94.631326
9	Caffetteria	39.001698	-94.630971
10	Jun's Japanese Restaurant	38.989226	-94.609214
11	Mi Ranchito	38.984278	-94.668683
12	Noodles & Company	38.990314	-94.608692
13	BURG & BARREL	38.991710	-94.666669
14	Chick-fil-A	38.973380	-94.607780
15	Mr. Gyros Greek Food & Pastry	38.978801	-94.668037
16	Clock Tower Bakery	38.985322	-94.671488
17	Minsky's Pizza	39.003401	-94.631448
18	Dragon Inn	38.984069	-94.672445
19	J. Gilbert's Wood-Fired Steaks & Seafood	38.967260	-94.666832
20	Waldo Pizza	38.992983	-94.593778
21	Papa Keno's Pizzeria	38.985687	-94.671447
22	Summit Grill	38.992682	-94.596182
23	Longboards	39.022321	-94.647848
24	The Snack Shack on Santa Fe	38.983103	-94.672463
25	Five Guys	38.970423	-94.607259
26	C. Frogs	39.002000	-94.631150
27	The Classic Cookie	38.999547	-94.594208
28	The Upper Crust	38.984406	-94.671737
29	Chipotle Mexican Grill	38.992328	-94.595443
..	...	...	...
70	Jimmy John's	38.979588	-94.667388
71	Thai Orchid	39.020881	-94.660732
72	Smitty's Garage	38.968223	-94.606596
73	Bru Ramen	38.992584	-94.595425
74	Wendy's	38.984159	-94.607853
75	Avenues Bistro	39.014281	-94.592817
76	R.J.'s Bob-Be-Que Shack	39.022798	-94.658150
77	Johnny's BBQ	39.020794	-94.665211
78	Stroud's	39.029231	-94.633594
79	Pickleman's Gourmet Cafe	38.992513	-94.594463
80	District. Pour House + Kitchen	38.998989	-94.594080
81	Panda Express	38.984712	-94.608491
82	Jimmy John's	39.022859	-94.646731
83	Papa Murphy's	38.988355	-94.607508
84	New Chinatown	39.023187	-94.664398
85	Rainbow China	38.982505	-94.607761
86	Paradise Biryani Pointe	38.963768	-94.670058
87	Jen Jen's Chinese Restaurant	38.964782	-94.670019
88	Salsa Grill	39.020892	-94.660837
89	Wok-N-Roll Express	38.978923	-94.666469
90	Sarpino's Pizzeria	38.957503	-94.629424
91	Johnny Cascone's Italian Restaurant	38.963830	-94.665612
92	Red Lobster	38.957180	-94.667084
93	Cozy's Cafe	38.993408	-94.664343
94	Sobahn Korean Restaurant	39.015010	-94.675828

95	Bo Ling's	38.964803	-94.665746
96	Lemongrass Thai Cuisine	38.984228	-94.670785
97	Papa John's Pizza	38.983825	-94.595182
98	D'Bronx	39.023111	-94.664350
99	Max's Burgers & Gyros	38.977836	-94.595124

	Venue_Category
0	Burger Joint
1	Bakery
2	French Restaurant
3	New American Restaurant
4	Bakery
5	Pizza Place
6	Bakery
7	American Restaurant
8	Café
9	Restaurant
10	Sushi Restaurant
11	Mexican Restaurant
12	Restaurant
13	American Restaurant
14	Fast Food Restaurant
15	Greek Restaurant
16	Bakery
17	Pizza Place
18	Asian Restaurant
19	Steakhouse
20	Pizza Place
21	Pizza Place
22	American Restaurant
23	Sandwich Place
24	Burger Joint
25	Burger Joint
26	BBQ Joint
27	Breakfast Spot
28	Bakery
29	Mexican Restaurant
..	...
70	Sandwich Place
71	Thai Restaurant
72	Burger Joint
73	Ramen Restaurant
74	Fast Food Restaurant
75	Tapas Restaurant
76	BBQ Joint
77	BBQ Joint
78	Fried Chicken Joint
79	Sandwich Place

80 American Restaurant  
 81 Chinese Restaurant  
 82 Sandwich Place  
 83 Pizza Place  
 84 Chinese Restaurant  
 85 Chinese Restaurant  
 86 Indian Restaurant  
 87 Chinese Restaurant  
 88 Mexican Restaurant  
 89 Chinese Restaurant  
 90 Pizza Place  
 91 Italian Restaurant  
 92 Seafood Restaurant  
 93 American Restaurant  
 94 Korean Restaurant  
 95 Chinese Restaurant  
 96 Thai Restaurant  
 97 Pizza Place  
 98 Pizza Place  
 99 Burger Joint

[100 rows x 4 columns]

	Venue	Venue_Latitude	Venue_Longitude \
0	Blazers	38.812573	-94.927209
1	Todd's Diner	38.811365	-94.919959
2	Fronteras Mexican Restaurant	38.812870	-94.908347
3	La Carreta	38.812761	-94.905854
4	Celebrity's	38.811069	-94.921032
5	Casey's General Store	38.815898	-94.909482
6	Goodcents Deli Fresh Subs	38.812733	-94.912078
7	Sonic Drive-In	38.811379	-94.915073
8	Papa Murphy's	38.812543	-94.911827
9	China Taste	38.812571	-94.911376
10	Pizza Hut	38.810624	-94.914920
11	Gambino's Pizza	38.811312	-94.915725
12	Perkins Restaurant & Bakery	38.811149	-94.888055
13	Domino's Pizza	38.812833	-94.906042
14	Subway	38.784038	-94.928476
15	Subway	38.810775	-94.890113
16	KFC	38.810666	-94.913664
17	Waffle House	38.811500	-94.889334
18	McDonald's	38.812890	-94.889745
19	Daddy's Diner	38.810921	-94.920608
20	El Herradura Mexican Restaurant	38.811300	-94.919914
21	Daylight Donuts	38.810298	-94.915980
22	Bob and Dee's	38.813044	-94.908659
23	Johnny Bruscos Pizza	38.814536	-94.908487
24	Taco Bell	38.810697	-94.913608



25	Planet Sub	38.812567	-94.906335
26	Billy Sims	38.812739	-94.906339
27	Honeybaked Cafe	38.791197	-94.918570
28	Hewai Asian Food	38.814454	-94.908390
29	Arby's	38.811305	-94.888884
30	Burger King	38.810363	-94.890720

	Venue_Category
0	Fast Food Restaurant
1	Diner
2	Mexican Restaurant
3	Mexican Restaurant
4	Restaurant
5	Pizza Place
6	Sandwich Place
7	Fast Food Restaurant
8	Pizza Place
9	Chinese Restaurant
10	Pizza Place
11	Pizza Place
12	American Restaurant
13	Pizza Place
14	Sandwich Place
15	Sandwich Place
16	Fried Chicken Joint
17	Breakfast Spot
18	Fast Food Restaurant
19	American Restaurant
20	Mexican Restaurant
21	Donut Shop
22	American Restaurant
23	Pizza Place
24	Fast Food Restaurant
25	Sandwich Place
26	BBQ Joint
27	Sandwich Place
28	Asian Restaurant
29	Fast Food Restaurant
30	Fast Food Restaurant

	Venue	Venue_Latitude	Venue_Longitude	\
0	Missouri Mud Company	38.813506	-94.478039	
1	Minsky's Pizza	38.812855	-94.467413	
2	The Pit Grill and Bar	38.812650	-94.476897	
3	Big biscuit	38.811302	-94.493440	
4	Firehouse Subs Raymore Gateway	38.812405	-94.493371	
5	SONIC Drive In	38.807991	-94.456260	
6	MOD Pizza	38.812268	-94.493514	
7	Casey's General Store	38.803309	-94.439409	

8	Subway	38.812410	-94.473525
9	QDOBA Mexican Eats	38.812328	-94.492655
10	McDonald's	38.812490	-94.474047
11	Casey's General Store	38.807672	-94.457481
12	Panda Express	38.812305	-94.492170
13	Taco Bell	38.812440	-94.468347
14	Steak 'n Shake	38.812026	-94.490141
15	Pizza Hut	38.811318	-94.493076
16	Mexico Viejo	38.813430	-94.477351
17	Subway	38.810301	-94.495381
18	KFC	38.813292	-94.494498
19	Papa John's Pizza	38.813336	-94.494891
20	Church's Chicken	38.812612	-94.499208
21	Wendy's	38.812435	-94.495446
22	Taste of China	38.812705	-94.467489
23	Subway	38.811274	-94.473380
24	Oriental Gardens	38.813051	-94.476962
25	McGrews	38.813377	-94.477261
26	Tequila Jalisco	38.809484	-94.457151
27	Golden Corral	38.812372	-94.491281
28	China Star	38.813377	-94.491017
29	Tokyo Japanese Steakhouse & Sushi Bar	38.814227	-94.496646
30	Pizza Shoppe	38.814271	-94.496662

	Venue_Category
0	Greek Restaurant
1	Pizza Place
2	American Restaurant
3	American Restaurant
4	Sandwich Place
5	Fast Food Restaurant
6	Restaurant
7	Pizza Place
8	Sandwich Place
9	Mexican Restaurant
10	Fast Food Restaurant
11	Pizza Place
12	Chinese Restaurant
13	Fast Food Restaurant
14	American Restaurant
15	Pizza Place
16	Mexican Restaurant
17	Sandwich Place
18	Fried Chicken Joint
19	Pizza Place
20	Fried Chicken Joint
21	Fast Food Restaurant
22	Asian Restaurant

23 Sandwich Place  
 24 Chinese Restaurant  
 25 Restaurant  
 26 Mexican Restaurant  
 27 American Restaurant  
 28 Chinese Restaurant  
 29 Japanese Restaurant  
 30 Pizza Place

	Name	Latitude	Longitude	minDistance \
0	Kansas City Missouri	39.100105	-94.578142	8.228269
1	Kansas City Kansas	39.113456	-94.626497	7.065800
2	Overland Park Kansas	38.974250	-94.685170	3.713225
3	Olathe Kansas	38.883886	-94.818870	6.204160
4	Independence Missouri	39.092479	-94.413792	5.851633
5	Lee's Summit Missouri	38.910716	-94.382130	8.172844
6	Shawnee Kansas	39.041672	-94.720238	5.019238
7	Blue Springs Missouri	39.017316	-94.282265	8.770909
8	Lenexa Kansas	38.969746	-94.784584	5.362264
9	Leavenworth Kansas	39.311326	-94.922759	5.000000
10	Leawood Kansas	38.966673	-94.616901	3.713225
11	Liberty Missouri	39.246479	-94.419079	8.382144
12	Raytown Missouri	39.016843	-94.463047	5.851633
13	Gladstone Missouri	39.221477	-94.571975	8.006209
14	Grandview Missouri	38.889848	-94.531382	5.452052
15	Belton Missouri	38.810810	-94.531350	3.438242
16	Prarie Village, Kansas	38.989722	-94.636111	5.773958
17	Gardner Kansas	38.810925	-94.927296	7.716028
18	Raymore Missouri	38.810131	-94.467650	3.438242

	minDistanceMeters	BBQCount	RestaurantCount
0	13242.083018	19.0	100.0
1	11371.274754	14.0	100.0
2	5975.841168	3.0	100.0
3	9984.603159	3.0	100.0
4	9417.267530	3.0	98.0
5	13152.884795	7.0	100.0
6	8077.661186	4.0	81.0
7	14115.374769	7.0	100.0
8	8629.705748	3.0	57.0
9	8046.700000	2.0	56.0
10	5975.841168	1.0	70.0
11	13489.718880	2.0	56.0
12	9417.267530	5.0	81.0
13	12884.711790	3.0	100.0
14	8774.205713	1.0	46.0
15	5533.300801	6.0	42.0
16	9292.261480	5.0	100.0
17	12417.712749	1.0	31.0

```
18          5533.300801          2.0          31.0
```

Now, let's add in the population data to the dataframe.

```
In [17]: Population = [488943, 152938, 191278, 137472, 117306, 97290, 65513, 54945, 53553, 36210, 34659, 31507, 29211, 27140, 25159, 23480, 22368]
        KCdf['Population'] = Population
        KCdf
```

```
Out[17]:
```

	Name	Latitude	Longitude	minDistance \
0	Kansas City Missouri	39.100105	-94.578142	8.228269
1	Kansas City Kansas	39.113456	-94.626497	7.065800
2	Overland Park Kansas	38.974250	-94.685170	3.713225
3	Olathe Kansas	38.883886	-94.818870	6.204160
4	Independence Missouri	39.092479	-94.413792	5.851633
5	Lee's Summit Missouri	38.910716	-94.382130	8.172844
6	Shawnee Kansas	39.041672	-94.720238	5.019238
7	Blue Springs Missouri	39.017316	-94.282265	8.770909
8	Lenexa Kansas	38.969746	-94.784584	5.362264
9	Leavenworth Kansas	39.311326	-94.922759	5.000000
10	Leawood Kansas	38.966673	-94.616901	3.713225
11	Liberty Missouri	39.246479	-94.419079	8.382144
12	Raytown Missouri	39.016843	-94.463047	5.851633
13	Gladstone Missouri	39.221477	-94.571975	8.006209
14	Grandview Missouri	38.889848	-94.531382	5.452052
15	Belton Missouri	38.810810	-94.531350	3.438242
16	Prarie Village, Kansas	38.989722	-94.636111	5.773958
17	Gardner Kansas	38.810925	-94.927296	7.716028
18	Raymore Missouri	38.810131	-94.467650	3.438242

	minDistanceMeters	BBQCount	RestaurantCount	Population
0	13242.083018	19.0	100.0	488943
1	11371.274754	14.0	100.0	152938
2	5975.841168	3.0	100.0	191278
3	9984.603159	3.0	100.0	137472
4	9417.267530	3.0	98.0	117306
5	13152.884795	7.0	100.0	97290
6	8077.661186	4.0	81.0	65513
7	14115.374769	7.0	100.0	54945
8	8629.705748	3.0	57.0	53553
9	8046.700000	2.0	56.0	36210
10	5975.841168	1.0	70.0	34659
11	13489.718880	2.0	56.0	31507
12	9417.267530	5.0	81.0	29211
13	12884.711790	3.0	100.0	27140
14	8774.205713	1.0	46.0	25159
15	5533.300801	6.0	42.0	23480
16	9292.261480	5.0	100.0	22368

17	12417.712749	1.0	31.0	21583
18	5533.300801	2.0	31.0	21167

Using the restaurant data that we have found above, along with the specific restaurant data for BBQ Joints and the populations of the municipalities surrounding Kansas City, we will analyze potential places for the ideal new BBQ restaurant.

### 1.3 Methodology

In the analysis section below, we'll first focus on determining which municipalities we would consider for the possible location of our restaurant. To do so, we'll use the following weighting system: suppose that 50% of our concern is being located in a district with too many BBQ restaurants, 10% of the concern is that the restaurant is located in a district with too many restaurants, and the final 40% of the concern is the restaurant be placed into a location with a high population.

First, we'll count the number of restaurants located within the municipalities and in particular count the number of BBQ restaurants. Then, we'll standardize population data, number of restaurants, and number of BBQ restaurants to a normal distribution.

Using the weights of each concern above and the standardized data, we'll create a weighted score for each of the municipalities - the municipalities with the highest scores will provide us with our candidates for where to place the new restaurant.

For the top choice of municipality, we'll provide a more detailed analysis. Using the restaurant data from Foursquare, we'll make a heat map of restaurants within the city. From the heat map, we'll identify locations with low densities of restaurants (and in particular BBQ restaurants, if necessary), and use k-means clustering to identify zones where a new restaurant would be likely to thrive.

### 1.4 Analysis

First, let's standardize the data that we'll be using to make the decision of municipality so that the units and the difference in sizes for each of the three columns don't effect the analysis.

```
In [18]: from sklearn import preprocessing
         scaler = preprocessing.StandardScaler()
         scaled_KC_Data = scaler.fit_transform(KCdf[['BBQCount', 'RestaurantCount', 'Population'])
         scaled_KC_Data = pd.DataFrame(scaled_KC_Data, columns = ['BBQScaled', 'RestaurantScaled', 'PopulationScaled'])
         KCdf = pd.concat([KCdf, scaled_KC_Data], axis = 1)
         KCdf

C:\Users\Andrew\Anaconda3\lib\site-packages\sklearn\preprocessing\data.py:645: DataConversionWarning: A column-vector y was passed when a 2d matrix was expected. The problem was treated as scalar vs vector; use y.reshape(-1) instead.
  return self.partial_fit(X, y)
C:\Users\Andrew\Anaconda3\lib\site-packages\sklearn\base.py:464: DataConversionWarning: Data was converted to float dtype.
  return self.fit(X, **fit_params).transform(X)
```

```
Out [18]:
```

	Name	Latitude	Longitude	minDistance	\
0	Kansas City Missouri	39.100105	-94.578142	8.228269	
1	Kansas City Kansas	39.113456	-94.626497	7.065800	
2	Overland Park Kansas	38.974250	-94.685170	3.713225	
3	Olathe Kansas	38.883886	-94.818870	6.204160	

4	Independence Missouri	39.092479	-94.413792	5.851633
5	Lee's Summit Missouri	38.910716	-94.382130	8.172844
6	Shawnee Kansas	39.041672	-94.720238	5.019238
7	Blue Springs Missouri	39.017316	-94.282265	8.770909
8	Lenexa Kansas	38.969746	-94.784584	5.362264
9	Leavenworth Kansas	39.311326	-94.922759	5.000000
10	Leawood Kansas	38.966673	-94.616901	3.713225
11	Liberty Missouri	39.246479	-94.419079	8.382144
12	Raytown Missouri	39.016843	-94.463047	5.851633
13	Gladstone Missouri	39.221477	-94.571975	8.006209
14	Grandview Missouri	38.889848	-94.531382	5.452052
15	Belton Missouri	38.810810	-94.531350	3.438242
16	Prarie Village, Kansas	38.989722	-94.636111	5.773958
17	Gardner Kansas	38.810925	-94.927296	7.716028
18	Raymore Missouri	38.810131	-94.467650	3.438242

	minDistanceMeters	BBQCount	RestaurantCount	Population	BBQScaled	\
0	13242.083018	19.0	100.0	488943	3.172740	
1	11371.274754	14.0	100.0	152938	2.056406	
2	5975.841168	3.0	100.0	191278	-0.399530	
3	9984.603159	3.0	100.0	137472	-0.399530	
4	9417.267530	3.0	98.0	117306	-0.399530	
5	13152.884795	7.0	100.0	97290	0.493537	
6	8077.661186	4.0	81.0	65513	-0.176263	
7	14115.374769	7.0	100.0	54945	0.493537	
8	8629.705748	3.0	57.0	53553	-0.399530	
9	8046.700000	2.0	56.0	36210	-0.622797	
10	5975.841168	1.0	70.0	34659	-0.846064	
11	13489.718880	2.0	56.0	31507	-0.622797	
12	9417.267530	5.0	81.0	29211	0.047004	
13	12884.711790	3.0	100.0	27140	-0.399530	
14	8774.205713	1.0	46.0	25159	-0.846064	
15	5533.300801	6.0	42.0	23480	0.270270	
16	9292.261480	5.0	100.0	22368	0.047004	
17	12417.712749	1.0	31.0	21583	-0.846064	
18	5533.300801	2.0	31.0	21167	-0.622797	

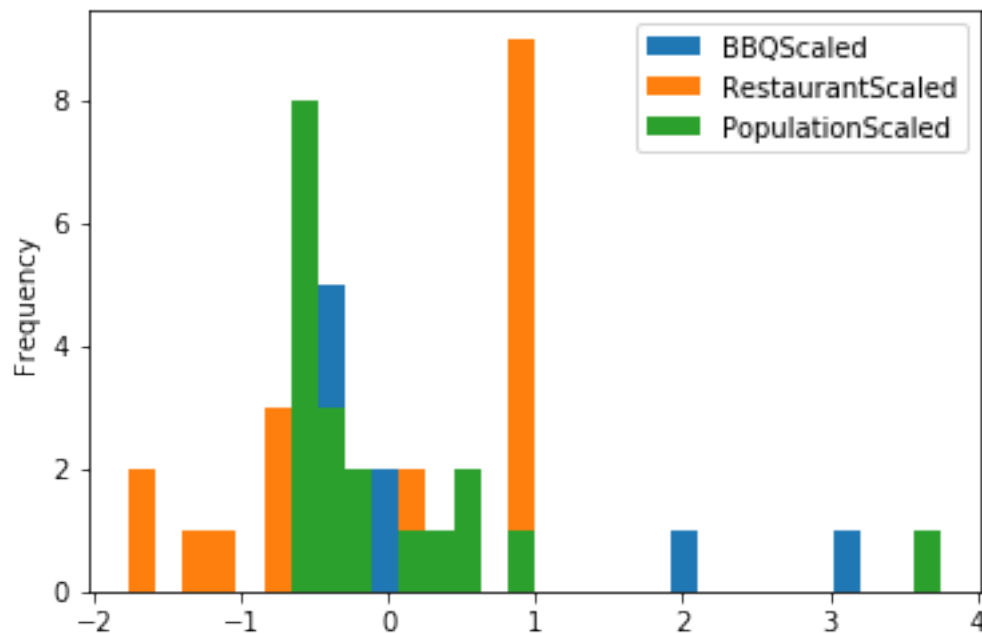
	RestaurantScaled	PopulationScaled
0	0.927524	3.755085
1	0.927524	0.624737
2	0.927524	0.981926
3	0.927524	0.480649
4	0.849374	0.292775
5	0.927524	0.106299
6	0.185094	-0.189748
7	0.927524	-0.288203
8	-0.752714	-0.301171
9	-0.791789	-0.462745

10	-0.244735	-0.477195
11	-0.791789	-0.506560
12	0.185094	-0.527951
13	0.927524	-0.547245
14	-1.182542	-0.565701
15	-1.338843	-0.581343
16	0.927524	-0.591703
17	-1.768671	-0.599016
18	-1.768671	-0.602892

Now, let's plot the scaled data to see how 'normal' it is.

```
In [20]: import matplotlib.pyplot as plt
         KCdf[['BBQScaled', 'RestaurantScaled', 'PopulationScaled']].plot(kind = 'hist', legend=
```

```
Out[20]: <matplotlib.axes._subplots.AxesSubplot at 0x13a15e43b38>
```



In the data above, note that a higher value for BBQScaled and RestaurantScaled represent areas with greater than average counts, which we should consider to be a negative impact on choosing a restaurant location. As a result, let's transform the data one more time, by reflecting the scaled data horizontally.

```
In [21]: KCdf['BBQScaled'] = KCdf['BBQScaled']* -1
         KCdf['RestaurantScaled'] = KCdf['RestaurantScaled']* -1
         KCdf
```

```
Out[21]:
```

	Name	Latitude	Longitude	minDistance	\
0	Kansas City Missouri	39.100105	-94.578142	8.228269	

1	Kansas City Kansas	39.113456	-94.626497	7.065800
2	Overland Park Kansas	38.974250	-94.685170	3.713225
3	Olathe Kansas	38.883886	-94.818870	6.204160
4	Independence Missouri	39.092479	-94.413792	5.851633
5	Lee's Summit Missouri	38.910716	-94.382130	8.172844
6	Shawnee Kansas	39.041672	-94.720238	5.019238
7	Blue Springs Missouri	39.017316	-94.282265	8.770909
8	Lenexa Kansas	38.969746	-94.784584	5.362264
9	Leavenworth Kansas	39.311326	-94.922759	5.000000
10	Leawood Kansas	38.966673	-94.616901	3.713225
11	Liberty Missouri	39.246479	-94.419079	8.382144
12	Raytown Missouri	39.016843	-94.463047	5.851633
13	Gladstone Missouri	39.221477	-94.571975	8.006209
14	Grandview Missouri	38.889848	-94.531382	5.452052
15	Belton Missouri	38.810810	-94.531350	3.438242
16	Prarie Village, Kansas	38.989722	-94.636111	5.773958
17	Gardner Kansas	38.810925	-94.927296	7.716028
18	Raymore Missouri	38.810131	-94.467650	3.438242

	minDistanceMeters	BBQCount	RestaurantCount	Population	BBQScaled \
0	13242.083018	19.0	100.0	488943	-3.172740
1	11371.274754	14.0	100.0	152938	-2.056406
2	5975.841168	3.0	100.0	191278	0.399530
3	9984.603159	3.0	100.0	137472	0.399530
4	9417.267530	3.0	98.0	117306	0.399530
5	13152.884795	7.0	100.0	97290	-0.493537
6	8077.661186	4.0	81.0	65513	0.176263
7	14115.374769	7.0	100.0	54945	-0.493537
8	8629.705748	3.0	57.0	53553	0.399530
9	8046.700000	2.0	56.0	36210	0.622797
10	5975.841168	1.0	70.0	34659	0.846064
11	13489.718880	2.0	56.0	31507	0.622797
12	9417.267530	5.0	81.0	29211	-0.047004
13	12884.711790	3.0	100.0	27140	0.399530
14	8774.205713	1.0	46.0	25159	0.846064
15	5533.300801	6.0	42.0	23480	-0.270270
16	9292.261480	5.0	100.0	22368	-0.047004
17	12417.712749	1.0	31.0	21583	0.846064
18	5533.300801	2.0	31.0	21167	0.622797

	RestaurantScaled	PopulationScaled
0	-0.927524	3.755085
1	-0.927524	0.624737
2	-0.927524	0.981926
3	-0.927524	0.480649
4	-0.849374	0.292775
5	-0.927524	0.106299
6	-0.185094	-0.189748



7	-0.927524	-0.288203
8	0.752714	-0.301171
9	0.791789	-0.462745
10	0.244735	-0.477195
11	0.791789	-0.506560
12	-0.185094	-0.527951
13	-0.927524	-0.547245
14	1.182542	-0.565701
15	1.338843	-0.581343
16	-0.927524	-0.591703
17	1.768671	-0.599016
18	1.768671	-0.602892

Now that our data has been standardized, and flipped so that negative qualities represent negative values and positive qualities represent positive values, let's create a weighted score based on the criteria given above. We said that 50% of the concern was on criteria 1 - how many BBQ restaurants were already within the municipality. 10% of the concern was on criteria 2 - how many other restaurants are within the municipality. The final 40% was on criteria 3 - how large is the population living within the municipality. Let's create a weighted score column based on these criteria.

```
In [22]: KCdf['Weighted Score'] = KCdf['BBQScaled']*0.5 + KCdf['RestaurantScaled']*0.1 + KCdf['PopulationScaled']*0.4
KCdf.sort_values('Weighted Score', ascending = False)
```

```
Out [22]:
```

	Name	Latitude	Longitude	minDistance	\
2	Overland Park Kansas	38.974250	-94.685170	3.713225	
17	Gardner Kansas	38.810925	-94.927296	7.716028	
14	Grandview Missouri	38.889848	-94.531382	5.452052	
3	Olathe Kansas	38.883886	-94.818870	6.204160	
10	Leawood Kansas	38.966673	-94.616901	3.713225	
18	Raymore Missouri	38.810131	-94.467650	3.438242	
4	Independence Missouri	39.092479	-94.413792	5.851633	
9	Leavenworth Kansas	39.311326	-94.922759	5.000000	
11	Liberty Missouri	39.246479	-94.419079	8.382144	
8	Lenexa Kansas	38.969746	-94.784584	5.362264	
6	Shawnee Kansas	39.041672	-94.720238	5.019238	
13	Gladstone Missouri	39.221477	-94.571975	8.006209	
0	Kansas City Missouri	39.100105	-94.578142	8.228269	
15	Belton Missouri	38.810810	-94.531350	3.438242	
12	Raytown Missouri	39.016843	-94.463047	5.851633	
5	Lee's Summit Missouri	38.910716	-94.382130	8.172844	
16	Prarie Village, Kansas	38.989722	-94.636111	5.773958	
7	Blue Springs Missouri	39.017316	-94.282265	8.770909	
1	Kansas City Kansas	39.113456	-94.626497	7.065800	

	minDistanceMeters	BBQCount	RestaurantCount	Population	BBQScaled	\
2	5975.841168	3.0	100.0	191278	0.399530	
17	12417.712749	1.0	31.0	21583	0.846064	

14	8774.205713	1.0	46.0	25159	0.846064
3	9984.603159	3.0	100.0	137472	0.399530
10	5975.841168	1.0	70.0	34659	0.846064
18	5533.300801	2.0	31.0	21167	0.622797
4	9417.267530	3.0	98.0	117306	0.399530
9	8046.700000	2.0	56.0	36210	0.622797
11	13489.718880	2.0	56.0	31507	0.622797
8	8629.705748	3.0	57.0	53553	0.399530
6	8077.661186	4.0	81.0	65513	0.176263
13	12884.711790	3.0	100.0	27140	0.399530
0	13242.083018	19.0	100.0	488943	-3.172740
15	5533.300801	6.0	42.0	23480	-0.270270
12	9417.267530	5.0	81.0	29211	-0.047004
5	13152.884795	7.0	100.0	97290	-0.493537
16	9292.261480	5.0	100.0	22368	-0.047004
7	14115.374769	7.0	100.0	54945	-0.493537
1	11371.274754	14.0	100.0	152938	-2.056406

	RestaurantScaled	PopulationScaled	Weighted Score
2	-0.927524	0.981926	0.499783
17	1.768671	-0.599016	0.360293
14	1.182542	-0.565701	0.315006
3	-0.927524	0.480649	0.299272
10	0.244735	-0.477195	0.256627
18	1.768671	-0.602892	0.247109
4	-0.849374	0.292775	0.231938
9	0.791789	-0.462745	0.205479
11	0.791789	-0.506560	0.187953
8	0.752714	-0.301171	0.154568
6	-0.185094	-0.189748	-0.006277
13	-0.927524	-0.547245	-0.111885
0	-0.927524	3.755085	-0.177088
15	1.338843	-0.581343	-0.233788
12	-0.185094	-0.527951	-0.253191
5	-0.927524	0.106299	-0.297002
16	-0.927524	-0.591703	-0.352935
7	-0.927524	-0.288203	-0.454802
1	-0.927524	0.624737	-0.871061

Notice that the municipality with the highest weighted score is Overland Park, Kansas. Let's consider Overland Park more closely to determine if we can find exactly where in the city we might want to place a BBQ restaurant. The map below shows all of the different restaurants within Overland Park in green, with the BBQ restaurants highlighted in red.

```
In [23]: OPRestaurantMap = folium.Map(location = [38.974250, -94.685170], zoom_start = 13, tiles = 'OpenStreetMap')
OPRestaurantMap.add_child(folium.Marker([38.974250, -94.685170], popup= 'Overland Park').add_to(OPRestaurantMap))
OPRestaurantMap.add_child(folium.Circle(radius = KCdf.loc[2, 'minDistanceMeters']/2, location = [38.974250, -94.685170], color = 'red'))
OPRestaurantMap.add_child(OPRestaurantMap.getNearbyRestaurants(KCdf.at[2, 'Latitude'], KCdf.at[2, 'Longitude']))
```

```

for row in OPRestaurantdf.itertuples():
    folium.Marker([row.Venue_Latitude, row.Venue_Longitude], popup= row.Venue, icon=f
OPBBQdf = getNearbyBBQJoints(KCdf.at[2, 'Latitude'], KCdf.at[2, 'Longitude'], KCdf.at
for row in OPBBQdf.itertuples():
    folium.Marker([row.Venue_Latitude, row.Venue_Longitude], popup= row.Venue, icon=f
OPRestaurantMap

```

Out[23]: <folium.folium.Map at 0x13a16125080>

Let's make a heat map that shows the areas of OP that have the most restaurants.

```

In [24]: from folium import plugins
from folium.plugins import HeatMap
OPRestaurantCoordinates = OPRestaurantdf[['Venue_Latitude', 'Venue_Longitude']]
OPRestaurantMap = folium.Map(location = [38.974250, -94.685170], zoom_start = 13, til
folium.Marker([38.974250, -94.685170], popup= 'Overland Park').add_to(OPRestaurantMap)
folium.Circle(radius = KCdf.loc[2, 'minDistanceMeters']/2, location = [38.974250, -94
HeatMap(OPRestaurantCoordinates).add_to(OPRestaurantMap)
for row in OPBBQdf.itertuples():
    folium.Marker([row.Venue_Latitude, row.Venue_Longitude], popup= row.Venue, icon=f
OPRestaurantMap

```

Out[24]: <folium.folium.Map at 0x13a160d79b0>

Notice that in the heat map above, there is a BBQ restaurant within two of the more densely populated restaurant areas of Overland Park, and one in the Northwest corner as well in a lesser populated area of restaurants. We also see that there are not many restaurants in the Southwest corner of the map - this is a largely residential portion of the city, as can be checked with Google Maps streetviews.

## 1.5 Results

Basing our decision on the criteria given above as well as the Foursquare restaurant location data, it seems that there one of the locations most likely to create a new and successful BBQ restaurant would be in Overland Park, likely along West 87th street, closer to the Western part of town than the East. We also saw that there are likely to be additional locations in Gardner, KS and Grandview, MO that we could find using a similar style of search. Should we decide to change the criteria or weights for deciding which parts of town we would want to place a new BBQ restaurant, we also have enough data to make that decision, due to the collection and analysis of restaurants and BBQ restaurants in particular throughout the Kansas City Metropolitan area.

## 1.6 Discussion

It is worth noting that there are other criteria that are likely to be important to a new business owner that we have not discussed here - these things include real estate availability, land prices, taxes (in Missouri versus Kansas and also local taxes), and even more. We should also note the limitations of this project - there are portions of the Kansas City Metropolitan area that were not covered by any of our districts, and the Foursquare API limited the total number of restaurants returned for each one to 100. Notice that several of the districts met such a cap. In the future,

it would be interesting to break the Kansas City area down into smaller districts, not limited to those with large name recognition, but instead to smaller areas that we can use to pull even more restaurant data. These smaller districts would likely provide a better coverage of the Kansas City area with less overlap. However, the challenge with doing so would be finding the appropriate population data. One option would be to remove this criterion completely, and change the way that we identify districts as good fits for a new BBQ restaurant.

## 1.7 Conclusion

In this project, we've explored possible locations for a new BBQ restaurant in the municipalities surrounding Kansas City, based on current density of restaurants, density of BBQ restaurants, and the population of the municipality. By using the restaurant location data from Foursquare, the predicted populations of each municipality, and a heat map within the specified municipality of interest, we were able to determine not only the best municipality for a new BBQ restaurant, but also potential locations within that municipality for the restaurant to be placed.

To make a final decision on where the restaurant would be placed, the business owners would likely want to visit the location in person to determine the physical features that cannot be determined strictly through data analysis - for instance, a location might great on paper, but upon visiting it could be clear that the restaurant isn't visible from nearby roadways. However, the analysis considered within this project provides a strong starting point for making the crucial decision of where to locate a new BBQ restaurant in Kansas City.

In [ ]: